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Towards Open School: How to Organize Innovation Contests with Students

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Abstract: This paper deals with open school, a new concept in higher education. Open school describes a new form of co-creation with students who become active contributors and knowledge producers at the university. To involve students appropriately in an open school environment, innovation contests provide a suitable solution approach; they enable students to work collaboratively on a set of different tasks and activities. However, innovation contests with students should be designed adequately, in order for the open school concept to achieve its objectives. A framework with eight design elements shows the main dimensions that must be taken into account when organizing innovation contests with students. The settings of two innovation contests initiated at the University of Leipzig are compared against each other by using this framework. These settings reveal advantages, but also problems that should be solved in the future.

1 Introduction

In the digital age, students want more than traditional lectures and look for more flexibility in their studies [TW10]. The new possibilities that arise from the use of the digital technology make it obvious that the university can offer more than it does today. Students have access to online encyclopedias; they can watch the online lectures of best universities worldwide; they can be members of social networks and communities to exchange information. The access to knowledge is no longer the problem, as knowledge is all around, and a few clicks away. The value that lectures and other traditional modes of teaching created for students in the past, before Web 2.0, seems to have diminished, and this value diminution will continue, as the capabilities of the Internet improve.

To contribute to the improvement of higher education, new concepts are required. Open school is a promising concept that can support this goal. Open school has been introduced by Abdelkafi et al. [ABFIR10], and Abdelkafi and Posselt [AP11]. Open school not only provides some answers to the question how to rethink and modernize higher education at universities; it also introduces a new mindset, as it integrates students more actively in the university's daily life.

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Open school goes beyond existing paradigms such as open university or open courseware, which focus on freely revealing learning and research materials to users. With open school, students are no longer passive consumers of knowledge; they are knowledge creators and active actors at their universities. In order for the students to become active contributors, however, the university must provide them with adequate tools. Although an open school can be principally supported by an offline platform, over which students can work collaboratively, the online solution offers much more advantages. An online platform is a web-based software system that supports a variety of functions such as the submission, discussion, and evaluation of ideas. By using such platforms, it is possible to organize innovation contests [AHBM11; BM10], in which students compete with each other. Innovation contests are fundamental elements of the open school concept and should be organized adequately; otherwise the open school cannot be successful. Therefore, the main objective of this paper is to identify and discuss the main design elements that must be taken into account when initiating innovation contests with students.

The paper is organized as follows. The next section deals with the relationships between the open school concept, creativity, and co-creation, a topic with increasing importance in management literature. The third section introduces a framework, which identifies eight design elements that should be carefully set up when initiating an innovation contest with students. The forth section analyzes two settings of the innovation contests carried out with students at the university of Leipzig. These settings reveal some advantages and problems, which are discussed within the fifth section. Finally, the last section summarizes the main results of the paper and proposes some directions for future research.

2 Open School: Co-Creation with Students

Open school aims to boost the creativity of students. Robinson defines creativity as the process of having ideas that create value [Ro09]. According to Amabile, creativity emerges when three components are available: expertise, creative thinking skills, and motivation [Am98]. Expertise is related to knowledge, which is what the traditional university has excelled in doing: the production of experts. „Creative thinking skills determine how flexibly and imaginatively people approach problems" [Am98, p. 79]. Open school improves the creative thinking skills of students, as it confronts them frequently with challenging tasks they have to solve collaboratively by using adequate tools. The motivation factor "determines what people will actually do" [Am98, p. 79]. Open school can be motivating for students, especially for those who look for working on practical tasks that create value.

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Thus, open school is conducive to creativity, the process that leads to the *creation* of ideas. In addition, it enables students to work *together* with their universities on concrete tasks. Therefore, in an open school environment, students are co-creators. In industry and the service sector, co-creation is a well-known concept. It is an approach that companies implement with stakeholders to solve diverse problems. "Co-creation draws innovative ideas from customers, employees and stakeholders at large" [RG10, p. 7]. For instance, co-creation with customers goes beyond product individualization and customization to involve customers in the development of the solution space. The solution space [Hi05] represents the set of product and service alternatives that the company offers to its customers.

According to Ramaswamy and Gouillart, three components are required in co-creation: collaborative process, engagement platforms, and human experiences [RG10]. "A collaborative process arises when a company creates value together with individuals, including internal and external stakeholders. Human experiences come from interaction, driving managers to adopt an experience mind-set rather than focus on goods and services. Engagement platforms come in all forms, from the product itself, to live meetings, websites, private community spaces, etc. [RG10, p. 247-248].

Open school applies the co-creation principle to the university with its main customers, the students. The engagement platform can be online (web-based software) or offline (e.g. workshop spaces, in which students make use of Lego building blocks or pin boards and Post-it notes to visualize their joint ideas). The main requirement on the platform is that it is flexible and capable of involving students in different types of activities. It should be noted, however, that an online platform triggers less efforts than an offline workshop when setting it up for a new task. In addition, students can work on the tasks, submitted on the platform, around the clock. Therefore, it is recommended using web-based platforms to implement the open school concept. In the following, when I speak of platforms, I mean those supported by web-based technology. The platform I have used so far is the IDEANET platform of HYVE AG. Students can post their ideas on this platform to make a contribution to a specific task. The collaborative process arises because students not only work together with the university, but also with their peers in order to develop innovative ideas. Human experiences are due to the interactions with the platform itself and over the platform by working together with colleagues to create ideas.

Open school thus uses the tools of open innovation – e.g. Internet platform – to involve students strongly into the university's daily life. The outputs can be innovations, incremental improvements, case studies, pieces of research, etc. In fact, three university areas can be interested in students' ideas: administration, research, and teaching. Administration may require ideas to improve processes. These improvements may be achieved by the re-organization of information flows inside the university, or by developing a piece of software. Research may be interested in carrying out simulations, or writing management case studies. The teaching staff may post tasks, which aim to gradually improve the learning material, or use innovation contests, as a virtual laboratory, in which students work together to solve problems [AP11].

3 Organization of Innovation Contests with students

So far, many innovation contests have been carried out with students in the context of teaching [e.g. AHBM11]. An innovation contest is an open innovation method that enables private and public institutions to tap into the wisdom of the crowd [HBM11]. After setting up the platform, students are requested to work collaboratively on a particular task that is defined in advance. When launching an innovation contest with students, there are many design elements that should be attentively selected. In the context of industry, Bullinger and Moeslein identify ten design elements for the organization of innovation contests. For each of these elements, they first identified a set of attributes and then combined all the results in a morphological box. These design elements are: media; organizer; task/topic specificity; degree of elaboration; target group; Participation as individual, team or both; contest runtime, reward/motivation; community functionality, and evaluation [BM10]. The design elements described in the following overlap, to a large extent, with the design elements, identified by Bullinger and Moeslein. Four elements (media, organizer, target group and community functionality) are, however, straightforward in the open school environment and will be excluded from the following discussion. So far, the media that has been used is online, as it is supported by IDEANET. The organizer is the teaching staff. The target group is the students, and since the IDEANET software enables online submissions, comments, and evaluations, the community functionality is available. Two further design elements, not found in Bullinger and Moeslein's morphological box, but make sense from in an open school environment are suggested: trials before official start and rules of the game.

Task description

The task should be carefully chosen and described at good level of detail. It should be achievable; otherwise, it is difficult to get students motivated to participate in the innovation contest. Therefore, the task should balance appropriate degrees of specificity and generality. Too specific tasks are only suitable for experts, and students may find it hard to make a contribution. Very general tasks, however, may trigger difficulties for students to start solving the problem at hand, since students may feel lost when the activity is not specific enough. Beside task description, students can be asked to think about technical and economical achievability of their new ideas. It may also be necessary to ask students to think of possible barriers, problems, and advantages of the innovation.

Trials before official start

Before launching officially an innovation contest, it can be advantageous to provide students with some time to "play" and get accustomed with the platform. When the Internet platform for ideation is intuitive, and uncomplicated to utilize, then trials are not necessary. Therefore, it is up to the instructor to evaluate the degree of difficulty of using the platform and to decide whether it is appropriate to offer a trial phase or not.

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Motivating factors

A main challenge of open school is to motivate students to participate. An innovation contest cannot be considered successful, unless it achieves the critical mass of participants. When the innovation contest is integrated in a lecture, instructors can use grades as a mechanism to achieve 100% participation. Grades influence extrinsic motivation, like money rewards within an innovation contest organized by industry. The higher the activity level, and the more innovative the ideas that a student comes up with, the better will be the grade.

The literature on creativity [e.g. Am98] and open source innovation [e.g. Hi05], however, emphasizes the importance of the other motivation type, the intrinsic motivation. It is a factor that improves participation and increases the quality of ideas. Intrinsic motivation is generally difficult to stimulate. Therefore, instructors should find a relationship between the innovation contest objectives and personal goals of students. Instructors may explain to students that the participation in innovation contests improves their problem solving skills. They may formulate problems students are directly concerned with; e.g. the improvement of university's daily business. Especially, if students are promised that best ideas will actually be implemented, intrinsic motivation can be high.

Duration

According to our experience, an innovation contest should last six to eight weeks. The rationale behind this is to avoid time pressure, as time pressure kills creativity [e.g. GHM09]. Ideally, contests are started at the beginning of the lecturing time in the university and closed a couple of weeks before the period of examinations begins. In this way, it is guaranteed that students have enough time to work on the task posted on the platform. In effect, when students are busy with the preparation for their exams, they will have less time to contribute to the innovation contest.

Support

As any software, the Internet platform that enables the innovation contest can give rise to some technical problems (e.g. problems with logins into the platform, problems with saving the ideas or comments, etc.). Therefore, students must be provided with some support, if they face such problems. These technical difficulties can be avoided by the university or the company, which is hosting the platform – in our case HYVE AG.

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Team's formation

An innovation contest can be organized in such a way that individuals compete against each other. However, this is not advantageous, especially in a teaching environment since it is important to illustrate to students that innovation is mostly the output of team work. Therefore, the contest involves building virtual teams, whose members work together and compete against other teams. The students can submit new ideas and comment all the ideas posted on the platform, not only the ideas of their own teams (principle of openness). The teams can be built by chance. Thus, students who may have no contact in real life may find themselves working virtually in the same group. The other alternative is to let the students build their groups themselves.

Evaluation of the students' performance

The students can be evaluated individually and as a group. The individual performance is associated with the student's activity; the higher the degree of activity on the platform, and the better the quality of the contributions (e.g. ideas, comments, and files uploaded.), the better the performance of the student.

The evaluation of the team's performance leads to a grade for the group. The ideas posted by the group members are commented and improved, as the innovation contest progresses. Consequently, many versions of the same idea can be created. At the end of the innovation contest, the teams can be invited to present their ideas in a class session, so that the instructor can assess the final result. The instructor can involve all students in the evaluation process. To reduce the burden associated with evaluation, instructors may only assess the final group presentations, thus avoiding individual evaluations. This leads to all members of a group getting the same grade. Note, however, that class presentations are only possible, if the number of groups is reasonable. For instance, in Professor Moeslein's class at the Friedrich-Alexander University in Nuremberg, it is not possible to schedule a session for final presentations, as the number of students who participate in the contest exceeds 1.200, leading to more than 240 groups of five [ABFIR11].

Rules of the game

To ensure a smooth interaction between students during the innovation contest, the teaching staff must define the rules of the game. It should be clear for students that they must treat each other adequately, while avoiding unnecessary comments. In effect, sometimes conflicts may arise; for instance when one group claims that its idea has been stolen by another group.

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4 Description of the Settings of two Innovation Contests

The department of innovation management and innovation economics at the University of Leipzig organizes an innovation contest with the students enrolled in the lecture "Basics of innovation management". So far, two contests have been launched: one in the winter semester 2010/2011 (contest 1), which has already finished, and one in the summer semester 2011 (contest 2), which is currently running at the time of writing this paper. The innovation contest is an integral part of the lecture and considered as an exercise in which students must participate to develop ideas collaboratively. Figure 1 summarizes the two settings that are used in the winter and summer semesters.

As the figure illustrates, the settings do not have a lot in common. The task descriptions are very different. Whereas contest 1 deals with the submission of commercial product ideas (physical or intangible), contest 2 asks the participants to develop service ideas provided by students for students in the context of the university. Some students who participated in the first contest found that the task was very general, and wished they had a more focused problem. Although general tasks offer more freedom, as it is up to the students to specify the area and the problem to solve, it became obvious that some degree of task specificity could be advantageous, as it guides the students in their search for ideas.

Design elements	Innovation contest winter semester 2010/2011	Innovation contest summer semester 2011
Task description	Develop the product idea you have ever dreamt of, but you have never found on the market!	Develop ideas for new services that can be provided by students for students at the university of Leipzig!
Trials before official start	The trials before official start lasted about one week; the platform is then reset, and the contest began officially.	There was no trial phase; the innovation contest started right after HYVE has created the user accounts for the students.
Motivating factors	The student's performance in the innovation contest contributes with 50% to the total grade.	The students' performance in the innovation contest contributes with only 20% to the total grade. Since the task students work on is very close to the university, students are expected to show high motivation to participate in this contest.
Duration	In total, the innovation contest lasted eight weeks. During the first phase (four weeks), students have been invited to submit product ideas. This option was not possible during the next phase (four weeks), as the students could only make comments and evaluations.	The innovation contest runs in a period of six weeks. There is only one phase; students can upload new ideas whenever they want during the whole duration of the innovation contest.
Support	The technical support is ensured by HYVE.	The technical support is ensured by HYVE.
Team's formation	The platform randomly allocates 16 students to different teams. In total, three teams consisting of five to six bachelor students have been formed.	46 bachelor and master students are allowed to make teams consisting of three to six members. Nine teams have been built in total.
Evaluation of the students' performance	The individual performance of students has been assessed by the instructor. The level of activity of the students and their motivation were the main criteria that have been used to allocate the individual grades. The group's performance is evaluated on the basis of the teams' presentations of the ideas they created (20 minutes per presentation) within a class session.	The individual performance does not count. The most important criterion is the team's performance. Due to the number of groups, students will have one to two minutes time to present their ideas in a class session. The quality of the ideas will be evaluated by the students themselves.
Rules of the game	Respect, fairness, and constructive criticism	Respect, fairness, and constructive criticism

Figure 1: Innovation contest settings at the University of Leipzig

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In contest 2, students did not get time to play with the platform, whereas contest 1 offered students the opportunity to experiment with the platform, before it started officially. Because the IDEANET platform is very intuitive, I thought that this experimentation period can be eliminated. In both contests, grades played an important role as a motivating factor and as a mechanism to achieve a high level of participation. The weight of the students' performance in the innovation contest is higher in the winter (50%) than in the summer semester (only 20%). But this does not mean that the participants in the second contest will be less motivated, as the contest offers a space, in which students can make proposals to improve their universities.

The first contest had a two-phase design with each phase lasting four weeks. Whereas the first phase focuses on the submission of original ideas, the second phase is only focused on posting evaluations, making comments, and generating better versions of the already submitted ideas. The rationale behind this setting was to motivate students to publish their ideas early enough, and to create a space that is only dedicated for the improvement of ideas and generation of better versions of it. It is noteworthy that the student who originally submitted an idea has the lead on it. That is, he or she accepts or rejects the suggestions coming from the community and is the only one, who is capable of generating new versions. With this setup of the contest, I tried to mimic some projects from the open source software world where the initiator has the full control on the project. In contrast to contest 1, contest 2 has only one phase that lasts six weeks, and during which students can post, comment, and evaluate ideas when they want.

The students of the winter semester class were assigned to teams randomly, whereas the students of the summer semester class were invited to make teams on their own. Before the second contest begun, every team leader has sent an email with the names of the team members and their Email-addresses to the department. Five students who had no groups were assigned to one team. Whereas the participants in the first contest were only bachelor students, the participants in the second contest were enrolled in master and bachelor study programs.

As the number of participants in the first contest did not exceed 16 students (3 teams in total), it was possible for the instructor to track the activities of each student on the platform and to give to each of them an individual grade. The teams' members had also the opportunity to make a 20-minutes presentation to describe the ideas and to report on their experiences during the innovation contest. In the second contest, however, the number of participants and teams is much higher. Consequently, individual assessment of performance and time slots of 20 minutes presentations are not possible. In line with innovation tournaments [TU09], students will have two minutes time to present their ideas by means of one single slide. Furthermore, all students will be involved in the evaluation of the teams.

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In both contests, technical support is achieved by HYVE AG and the rules of the game are the same. Students are motivated to respect the ideas of their colleagues and to avoid unnecessary comments, which can be the source for conflicts. Furthermore, students should be fair and treat each other, as they would like themselves to be treated. Finally, criticism must be constructive, so that it benefits all the participants. At the end, the innovation contest is nothing else than a small virtual competition, which should improve the innovation competencies of students.

5 Advantages and Problems

The open school is a concept that aims to integrate students more strongly in the university's daily business. The innovation contests done so far are actually in line with this concept, but it is still a long way to go before achieving the big objective. The big objective is to make the university a true open organization, in which students take a major role in generating knowledge and innovations. In the journey toward the open school, however, the trial of different settings enables a better understanding of the advantages and problems that are associated with this new concept.

When a university (teaching and research staff, administration, library, canteen, etc.) implements the principles of an open school, it gets access to a big ideas' source with high potential. Students are generally aged between 20 and 30 years, the period of lifetime at which the human mind is at its highest performance. For instance, most of the Nobel price laureates and greatest mathematicians did their best pieces of research in their twenties [Ge94]. Unfortunately, our universities seem to be unaware of the potential of their students. Universities have been so far excellent in devising different kinds of examinations to test the knowledge and intelligence of students. But they were poor at creating mechanisms to profit and to get benefit from the students' intelligence, creativity, and ability to solve problems. The open school provides some principles to transform the university from a place where intelligence and knowledge are practiced to be tested to a place where intelligence and knowledge are practiced to generate value.

The innovation contests with the students have revealed some problems that should be solved very soon in order to be able to lead open school to success. The first problem is related to the Intellectual Property Rights (IPR). For instance, one bachelor student who participated in the first contest said that she did not submit product ideas on the platform, since she had a fear that her ideas would be stolen. Although innovations are according to Edison 10% inspiration and 90% transpiration [TB09], which means that coming up with a new idea, still requires a lot of work to make the idea a real innovation, it is important to find a solution to the challenges that IPR can cause in an open school contest. To avoid the problems that may arise because of IPR, the task of the second contest was intentionally chosen, so that it is related to the university. Like employees submitting ideas to improve their companies, students will be less preoccupied by IPR when posting ideas that are related to their universities.

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So far, the grade has been used as a mechanism to achieve a high level of participation. This was possible, because the innovation contests were integrated within the lectures. But what would happen, if the contests were independent of the lectures? Would the students still be motivated to participate in the contests? How should the university be reorganized, in order for students not to perceive their participations as an additional burden, but an integral part of their education? Finally, another problem arises when assessing the students' performance. In an environment, in which we know the problem and the solution, the evaluation of students is straightforward, as we should compare the student's solution to the right one. But how can we evaluate the performance of students when they propose a solution to a problem for which we do not know the best solution?

6 Conclusions and Directions for Future Research

To achieve the open school concept, universities should look differently to their students; they should consider them as knowledge producers and active university members. To make the open school a real phenomenon, many studies are required to test different settings. This paper dealt with how to organize an innovation contest with students within the scope of a lecture. I suggested eight design elements, which are important to think of, before initiating a contest with students. Both settings used at the University of Leipzig are compared against each other using the identified elements. After conducting many settings in the future, it will be possible to find out the "ideal" setting(s) leading an innovation contest at the university to success.

So far, the innovation contests have been focused on students and problem solving in a teaching environment. In fact, there are many ways to extend the scope of these contests. I identify four areas for extensions that are worth investigating in the future: usage, output, task, and geographical scope. The first area, which is usage, is related to the purpose of using the open school platform. In the innovation contests that have been already organized, students got the activity from the teaching staff. But let us imagine that the tasks are posted on the platform by an industrial company. In this way, not only students, but also the research staff can participate and work collaboratively to come up with innovative solutions. Note the potential of this setting for solving the transfer problem that the academic research results frequently face to be moved from the university to industry. The second area is the output, which may involve, in addition to teaching, research activities. For instance, it is thinkable that the research staff submits research tasks on the platform to request contributions from students. The third area is related to the type of tasks students are asked to contribute to. So far, it has been supposed that the problems are available and well formulated, and students were requested to make contributions. But this happens only in an ideal world. It may be very advantageous to organize contests, in which students collaborate to find and formulate adequate problems that are worth solving. Finding new problems is at least as important as identifying new solutions. Finally, the geographical scope is related to the organization of contests with students from universities placed in different geographical areas. This factor can have a very positive impact on the intrinsic motivation of students and to drive them to contribute with solutions to the problems posted on the open school platform.

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