

Collaborative Idea Cultivation: The eCiC Approach and System

Marco Bettoni, Nicole Bittel, Willi Bernhard

Swiss Distance University of Applied Sciences (FFHS), Brig, Switzerland

marco.bettoni@weknow.ch

nicole.bittel@ffhs.ch

willi.bernhard@ffhs.ch

Abstract:

The eCiC system (eCiC = electronic Collaborative idea Cultivation) enables collaborative creativity in education. This paper presents the eCiC approach, the method and models, the online tool as well as some applications in educational situations. Finally a summary of experiences, applications and future developments will be given.

1. Introduction

Creative collaboration among students is an activity that plays an increasingly important role in education. But collaboration and cooperation are not easy (Sennett 2012) and schools are not particularly renowned as creative places (Robinson 2012). We usually think about creative work in terms of the exceptional performances of a single individual, but creativity can be greatly enhanced through collaborative action under the following five conditions (Pfauth 2008), that are fulfilled by our eCiC system:

- DIVERSITY: Diversity is king. Participants need to think differently and have different knowledge.
- SHARING: Give people ways to contribute. They need really simple ways to add their piece of information.
- CONNECTION: Connect people with each other by using the most suitable technology.
- PURPOSE & PAY-OFF: The most important one: participants must have a shared sense of purpose and an individual sense of pay-off. Use a mascot or something.
- STRUCTURE: Communities need to have some element of structure to make decisions.

Since we deal with collaboration among students it may be useful here to clarify the essence of collaboration and collaborative learning. Collaborative learning consists in the co-construction of shared understanding (Roschelle & Teasley 1995; Dillenbourg & Fischer 2007) where collaboration is understood as the mutual engagement of participants in a coordinated effort to solve the same problem or work on the same single task together (Roschelle & Teasley 1995).

2. The eCiC Approach

In a class or group, when a student is trying to understand other colleagues and also when he/she is trying to contribute to the class's or group's work, the student will have and propose ideas. And what happens in the class or group interaction with these ideas? They will enter the conversation or debate and slowly disappear in a sea of words, leaving a quickly vanishing wake pattern. This may be ok in most cases but is surely a problem when the lost idea had the potential of making an important contribution. The need in such situations consists of taking the idea seriously, keeping it alive and recognising its value.

This is where our approach comes in: our objective is to make sure that the idea does not get lost and to offer it a chance of being taken seriously, kept alive and recognised for its value. The foundation of this is our conception of any idea as "seeds": like the seeds of plants, if we give them some special attention and nurturing, they will grow and reveal their true potential. In our solution, this special attention and nurturing is carried out by means of a collaborative online process in which the "idea seed" will be "cultivated" in various interactive phases defined by the eCiC method and supported by the eCiC online tool. Together, the method and tool constitute the eCiC system.

3. The eCiC Interaction Method

How can a student who has an idea propose it to the group or whole class for discussion and how can we make sure that this idea will not be ignored, will not disappear and that the student's potential contribution will not be lost forever? Our solution to meet these objectives consists of a facilitated interaction process which will proceed online with the common purpose or goal of cultivating the proposed idea.

Our design of the whole interaction process and platform has been guided by the objective of promoting a sense of community. The main reason for choosing this design principle is that we see in the community of practice model developed by Wenger (1998, Wenger et al. 2002, Bettoni et al. 2007) the best way to fulfil the aforementioned conditions for stimulating creativity through collaborative action: diversity, sharing, connection, purpose & pay-off, structure (see section 1 - Introduction).

The eCiC interaction method is a procedure that defines three stages of a creative collaboration session: a) stage 1: setting up of a creative collaboration session; b) stage 2: idea processing according to the "Stockalper model"; c) stage 3: closing the creative collaboration session.

3.1. Creative collaboration session: set up

When a student has an idea and wants to propose it to the group or whole class for discussion, he/she logs in in the eCiC platform. The student's role is here that of an "*idea owner*"; as such, the student can post a short description of the idea in the "Idea entry" forum.

A team of students with the role of facilitators (Facilitator Team or F-team) will see the new entry, briefly discuss it and appoint a member of their team to the role of "*idea facilitator*"; from now on, this student will be responsible for the further processing of the idea. At first, the *idea facilitator* will check that the new idea is suitable for eCiC according to some criteria (for instance: form, content, time, duration, etc.); if this is the case, he/she will then start a new discussion (in the "Team Building" forum) for setting up a team of students interested in collaborating to further develop this idea (Idea Team or I-team). Required members of the I-team are: the idea owner, the idea facilitator, one or more ideas supporters and possibly either a "*devil supporter*", a devil's advocate for engaging others in an argumentative discussion process or an "*angel supporter*", dedicated to promoting a more conversational, dialogical way of interacting (Gurteen 2014, Zeldin 1998); all of them are recruited from students of the same class.

Once the team building has been completed, the facilitator will clarify some planning issues (like dates for synchronous meetings or session milestones) first with the idea owner and then with the whole I-team. Eventually, all is ready for starting the idea processing.

3.2. The "Stockalper model" of idea processing

In the eCiC system idea processing follows the so-called "Stockalper model" composed by three processing phases: a moon phase, a stars phase and a sun phase.

At the beginning of idea processing, the facilitator will open a new discussion in the "idea processing" forum and for each phase, a new discussion thread will be opened at the beginning of the phase. At the end of each phase, the facilitator will write a summary of the results in the idea processing wiki, where each idea will have its own wiki page. Before starting with phase 1, the facilitator will also create a new record in the idea database, a collection of all relevant idea processing features, like idea identification number, idea title, idea short description, name of the idea owner, processing status, date of idea entry, link to forum discussion, link to wiki page and link to results.

Phase 1: The Moon phase. During this first phase, we clarify the proposed idea and search together for its objective (idea definition). The moon symbolises the fact that we start our search in the dark and are looking for something that provides us with a grip so that we can advance more easily in the intended direction. This phase of idea identification provides answers to the question of "WHAT do we want to achieve?" It contributes to understanding the problem (need) and to defining which objective to pursue.

Phase 2: The Stars phase. In this phase, we search for solution ideas (idea search). The stars symbolise nearby and far away solution ideas which appear in many different forms and together constitute our solutions space. The phase of ideas finding provides answers to the question of "HOW can we reach the WHAT of phase 1?" Many solution ideas are collected, analysed and systematically evaluated in terms of their suitability in satisfying the identified needs and reaching the defined objective. This is a crucial moment of the conversation and in order to make sure that collaboration proceeds efficiently and effectively, we apply our SFM method here (Solution Finder Model), a problem-solving method for finding high quality solutions quickly (Bettoni et

al. 2013). The task of applying the SFM method is usually assigned to the facilitator but in principle any member of the I-team could do it, provided he/she has received some training and gained some experience.

Phase 3: The Sun phase. In this last phase, we work on one idea selected from phase 2 and try to determine how to implement it (idea implementation). The sun symbolises the elected star with its unique features. This phase of idea implementation provides answers to the question of "BY WHAT means can we implement the HOW from phase 2?" Practicable solution ideas are analysed in terms of their suitability for implementation and improved accordingly. At the end, a short report and a fact sheet are produced which describe the idea as it finally resulted from the three processing steps.

3.3. Creative collaboration session: closing

When the two documents for the idea report and idea fact sheet are ready, the facilitator will update the database record and then create a fourth thread in the idea processing discussion where he/she asks the team what they suggest doing next with the results of the work.

This discussion will produce a simple to do list of tasks with deadlines and the persons in charge. When a task has been accomplished, the person in charge will post a short notice in the same thread. When all the tasks have been accomplished, the facilitator will invite each team member to participate in a short evaluation survey about the whole session; after that, the session will be closed by each team member saying thank you and goodbye in a creative way.

4. The eCiC Online Tool

Basically the eCiC Online Tool has to provide support for enabling the interactions and tasks required by the eCiC interaction method described in the previous section. Our current implementation is based on the Moodle system, which is widely used in education around the world. Moodle provides all the tools that we need for implementing the eCiC interaction method online: forum, wiki, database and folder.

Our guiding principle in designing the user-interface of these tools was to lower the cost of participation as much as possible, which is also one of the requirements that have proven relevant for supporting community life (Agostini et al. 2005). This is why we offer only three buttons on the main page, which are focused on the three main activities of the students: a) entering ideas; b) contributing to the idea processing; c) acquiring information (Fig. 1).



Fig. 1 - Main page of the eCiC online tool (in German)

Clicking on the first button to the left, "IDEEN EINGABE" (idea entry), the student gains access to the idea entry forum where he/she can create a new discussion and enter the idea. In the header of the same page, a short description of the forum is provided as well as access to a set of three one-page manuals describing: a) the eCiC system; b) how to participate; c) how ideas are selected for processing. Access to the team building forum students is provided by the facilitator who publishes a link in the "News" forum.

The second button, "IDEEN BEARBEITUNG" (idea processing) gives access to the idea processing forum where students can select the appropriate discussion from a list (each idea has an own discussion) and read the available posts or post their own contributions. In the header of this forum page, a short description of the forum is provided as well as access to the idea processing wiki where the facilitator at the end of each phase

summarises the results of the idea processing. A link to a forum search functions allows students to search for any keyword across all the discussions.

Finally the third button, "INFORMATION" gives direct access to the main page of the idea processing wiki which contains a list of all wiki pages, one per each idea, divided in three sections, one per each processing phase. In the header of this wiki main page, two links provide access to further information: a) the database collecting detailed information about each idea and b) the News forum.

5. Applications in Education

In the following two examples, we give a couple of suggestions of how the eCiC system could be applied in education for designing school lessons by integrating student input (example 5.1) and for students who want to eliminate personal learning barriers from their course (example 5.2).

5.1. Subject empowerment with eCiC

What. The eCiC system can be applied to design school lessons by integrating student input. Students collaboratively develop suggestions of how a subject can be taught, regarding their individual interests. To this end, students use eCiC to share which aspects of a topic interest them and on which they would like to focus on as well as how they would design the learning of these aspects. Finally, one or several of these suggestions can be implemented in class.

How. The following steps are one option to empower the students' role as teaching co-designers with the help of eCiC:

- A. The teacher announces a new teaching topic and explains how to proceed. That means: he/she invites the students to share: a) What they would like to know about this topic and b) How they would like to learn it. Finally he/she formulates a couple of guidelines about how and when the assignment has to be done.
- B. The students hand in their input: they write down in the forum what they would like to know and how they would like to learn it.
- C. Teams are built according to the teacher's guidelines. To this end, students join whichever idea submission they would like to work on. A submission which does not have at least two people who would like to work on it is eliminated.
- D. The groups work on their suggestions by going through the 3 phases of the model: a) they define the idea by looking at it from different perspectives; b) they look for potential solutions for the idea; c) they define ways of implementing it.
- E. After the suggestions have been developed, the teacher starts a vote in class (f2f or virtual). Those idea(s) with the most votes is/are then implemented in class.

Why. With this method, teachers can promote collaborative creativity. It allows students to become active co-designers of lessons by bringing in their ideas and proposals. Thus, the method is a complement to the traditional model of learners vs. teacher. It is expected to attract the students' interest and to engage them to incorporate and share their own views. The method offers the opportunity to empower learners to overcome their perception of a lack of power and influence.

Example. The teacher informs his/her students in autumn that they will be dealing with the topic of "mental disorders" after Christmas and asks them to write down in the forum which elements of this topic they are most interested in. One student suggests exploring the question of how people with a mental disorder go about their daily life. Together with 3 other classmates, he/she first defines the question (What do we want to know? Do we want to know which definition of daily life those people have? Or do we want to know in which way their daily life differs from ours? etc.), before looking for solutions (How can we achieve what we want to know?). Finally they identify how the solution can be implemented to reach the goal (by what can we achieve what we want to know?). In this example, the team decides to invite people suffering from a mental disorder to school to share their individual perception of everyday life with the students. Since most of the students would like to implement this idea, the teacher organises such interviews with the help of his/her students.

5.2. Eliminating Learning barriers with eCiC

What. The eCiC method can be applied for students who want to eliminate personal learning barriers within their course. They can use eCiC as an instrument like a megaphone for the teacher and also experience whether other students have the same problem where a better solution would be appropriate. It is a common situation that students experience unreadable slides, overly fast lectures or incomprehensible lessons. But nobody wants to complain or be seen in a bad light by the teacher.

How. With the help of eCiC, the students can share and discuss educational barriers which they explore within the class in a collaborative way. They are not alone with their problem and while using eCiC, they will explore better solutions and possible problem solving ideas which they can provide to the teacher. By using eCiC, they can propose better solutions for the course.

Why. Students are very exposed to a teacher if they suggest better solutions for teaching. Because of this fact, a collaborative suggestion will be more effective, even if it is anonymous and can be delivered to the teacher as a whole, as the opinion of the class.

Example. This example is a real one, made with students on a course. By using the eCiC system, they find out that they can react better and even improve their learning on courses if they give the teacher immediate feedback about good and bad things on the course. For example, if the slides are unreadable or the examples are too complicated. At the end, the collaborative solution of the students was to have a learners' speaker who expresses their concerns to the teacher. In this way, the learners' speaker has an official function for the class and does not speak on his/her own, so the teacher speaks more to a learning-representative of the class than to a student. The students also found a creative solution which helped them a lot to improve their learning together with the teacher.

6. Conclusions

To create, share, discuss, analyse and cultivate new ideas in a collaborative way is not an easy task, especially when the participants are distributed over a wide area and cannot easily meet face to face. On the other hand, web-based tools create a great flexibility in space and time for working together in a collaborative way. To be successful, it needs a guided process which must be as simple as possible for the user as well as an acceptance of the tools used. But this is still not enough; when a wide range of people discuss ideas it can go forever if decision making is part of the process. So it also needs a powerful method in the analysis part of the ideas handling. The eCiC system was developed under these circumstances, tested in real cases and improved over time.

Technically, we used the open-source learning management system MOODLE, because it is well-known by the students and therefore already accepted as a common web-tool in learning; but the eCiC system could be implemented also in other platforms.

The guided process of entering an idea and discussing it is supported by a simple three button design, with the idea that even inexperienced participating users can immediately use the system in a self-explanatory way. The participating user only deals with discussion forums, while the facilitator also has to summarise the results in a wiki. The different roles make it possible to integrate as many interested people as possible without the need to provide lessons on how to handle the system for all.

A great help is the use of the SFM method, which enables switching from a divergent and open thinking phase to a convergent analytical thinking phase for all participants. Before the eCiC system was used with students in learning processes, it had its application in distributed research and business teams.

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