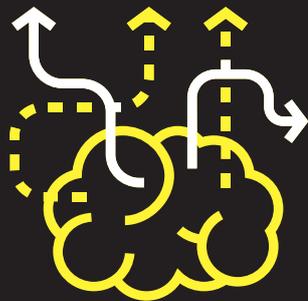




# *Introduction*



**BOOST YOUR**

**C@T!V!TY**

# Background

The CIBIS creativity training package **BOOST YOUR C@Σ@T!VITY** [creativity] is based on research from Aarhus University. It originates from the CIBIS (Creativity in Blended Interaction Spaces) research project, supported by the Danish Innovation Fund (2014-2019). The CIBIS project was an interdisciplinary collaboration between universities, businesses and schools – more specifically Aarhus University, Copenhagen Business School, Designit (Europe's largest strategic design company), LEGO Education, the Academy for Talented Youth in Central Denmark Region, Viby Senior High School, Ørestad Senior High School and Aarhus Tech-Viby. The CIBIS project has produced new knowledge of ways in which one can enhance the potential for creative thinking focusing on digital design, information technology and innovation. The training package is therefore built on a solid theoretical foundation and a variety of experiments and exercises.

The teaching package material has been produced by:

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Furthermore, we would also like to thank the following for their valuable contributions regarding testing the material in the development process and the feedback we received through this:

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**Ole Nystrøm, lecturer, Viby Tech**

**- and their students**

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# Purpose

The CIBIS creativity training package **BOOST YOUR C@Σ@T!VITY** has been produced on a scientific basis to help to enhance creative skills. The content is particularly relevant to courses concerned with innovation, design, architecture and the visual arts, but can also be used by language courses and social studies to work on creativity in an exploratory, experimental and interdisciplinary context.

The creativity training package contains a variety of activities that explore creative thinking based on three themes:

1 Ideation, 2 Sources of inspiration and 3 Constraints

Knowledge of these three themes is an important basis for developing and enhancing creative skills in both individual and collaborative processes. Together, the three themes provide a wide-ranging research-based introduction to creative thinking, which can also help in the development of academic skills for pupils in K-12 schools and young people in youth education programmes, as the skills the students gain from the training package will benefit them in higher education, where they are expected to be able to work independently, reflectively and creatively. Finally, the training package can benefit children, young people and adults in their understanding of creativity through practical exercises, into which teachers can insert their own themes, objects for analysis and goals for the individual exercise in each of the three themes.

## THE CIBIS CREATIVITY PACKAGE WILL

- *Integrates scientifically based creativity thinking into teaching practice*
- *Develops creative skills through exercises and reflection*
- *Supports understanding and planning of and collaboration in creative processes*

# Learning outcomes

The CIBIS creativity training package is designed to enhance creative skills on the basis of scientific knowledge, with an emphasis on active learning. The training pack is not about scoring points or comparing marks. The idea is to show that creative thinking is for everyone, i.e. that anyone can learn to work more creatively and enjoy the satisfaction that this brings in the form of more original papers, designs, projects and results. The training package can also help to increase awareness of the need to explore as many aspects of a given problem as possible and to plan creative processes more effectively. Also, the training package provides general guidance on communication, collaboration and constructive criticism.

## **AFTER COMPLETING BOOST YOUR C<sup>R</sup>Σ@T!V!TY, STUDENTS WILL BE ABLE TO**

- *Enter into, account for and discuss creative processes on a more informed basis, including understanding how creative choices, tools and insights influence the degree of originality in the creative result*
- *Analyse and discuss three of the most important elements of any creative task, namely the importance of ideation, sources of inspiration and constraints in creative processes*
- *Reflect on the general role that creativity plays in students' academic skills and education*
- *Use basic creative methods and techniques to tackle creative tasks and activities.*

# Themes

The content of all three themes is not made up of advanced, complex material, but knowledge that can be easily communicated and applied, as we all face every day, to a greater or lesser extent, situations where ideation, sources of inspiration and/or creativity constraints play an important role. Each of the three themes presents clear learning outcomes for the theme as well as an introduction for the teacher to the given theme and its contents. The three thematic modules can be summarised as follows:

## **THEME 1** *Ideation*

**Introduces students to simple techniques and methods for systematically developing ideas. It also strengthens students' understanding of how a creative process (often) unfolds.**

Ideation is such an important element in creative processes that the activity is often – incorrectly – equated with creativity. In this module, students are introduced to methods for development, elaboration and selection of ideas, as well as to a few basic models of creative processes. This ensures that the students gain a better understanding of when an ideation activity may be relevant, and when it should rather be abandoned in favour of a more systematic assessment and elimination of ideas.

## **THEME 2** *Sources of inspiration*

**Introduces students to the importance of collecting, storing and working systematically with sources of inspiration in a creative process.**

To be able to collect, store and use sources of inspiration as a growing and easily accessible stock of creative 'building blocks' is one of the measures that can have the greatest positive effect on a person's creative skills. This systematic approach to sources of inspiration can be clearly seen in creative professionals, such as designers, writers and artists. In this module, students learn what a difference it makes to look for sources of inspiration both close to and far from the domain they know and work within for a specific task, and how digital media and the Internet can be used as resources in this process.

## **THEME 3** *Constraints*

**Introduces students to the important dual role played by different types of constraints in a creative process.**

One might think it would be an advantage to have many options in a creative process, as this freedom would increase the chances of finding a solution that is both original and useful, so one's 'opportunity space' should be as large as possible. However, research into creativity has shown otherwise. In this theme, students learn that constraints can both expand and narrow down the opportunity space in a creative task. The students also learn to identify and analyse different types of constraints.

# Modular structure

The CIBIS creativity training package **BOOST YOUR C@Σ@T!V!TY** has a modular structure. This means that each of the three themes is made up of a number of activities, which act as building blocks which the teacher is free to choose from and assemble into individual lessons. The teacher can thus vary the scope and depth of each theme, depending on how many or how few activities he or she wants to include in a given lesson. This means that the teacher, who knows the individual students and the class as a whole, can tailor the content of each theme to suit the individual teaching situation, learning objectives and culture in the class.

## Activities

The activities in the CIBIS creativity training package are the concrete building blocks which make up each of the three themes. The teacher is free to choose the types and the number of activities that are most relevant to the individual course content and learning outcomes. The teacher can also decide on the order in which these activities are to be placed. Many of the activities can be used individually. However, the training package is recommended for double lessons lasting around 75-90 minutes. The activities are designed in such a way that they are aimed at courses related to innovation and design, but other disciplines may also find the activities useful, as they can be easily adapted to the individual subject.

The following section features a brief presentation of the types of activities in the creativity training package. The activities are described in more detail under each of the three themes.

### **A** *Didactic and thematic introduction*

The teacher introduces the selected theme with an included approx. 10-page slide show. These slides run through the key learning outcomes to ensure a clear alignment of expectations between teacher and students. The theme is presented via simple statements and familiar examples. The teacher can tie the introduction to the students' academic field by relating it to current projects, assignments or academic theme weeks. The teacher can add or delete slides or insert the slide show into his or her own digital presentation program. The length of this introductory activity will therefore vary according to how much the teacher wants to go into depth and engage the students in general knowledge of the individual theme.

## **B** *Practical exercises*

To support active learning, each theme includes a number of exercises of varying duration and complexity. The exercises have been chosen to illustrate important concepts, tools and insights within each theme. The duration of the exercises ranges from about five minutes to one hour, and they involve a variety of materials and resources. All of these practical exercises are described in detail under each theme based on the following: Subject type, Summary, Purpose, Type of exercise, Duration, Materials, Description, Questions for reflection after the exercise, and Other examples that can be used.

## **C** *Presentation*

The ability to communicate knowledge is an important academic skill. It is therefore recommended that the students be given the opportunity to present their creative process, choices and discarded ideas and results. In each theme, the students can present and share proposed solutions (models, concepts, etc.) with their peers. This can be done individually and voluntarily, where those who want to can present their proposed solutions, or systematically directed by the teacher, e.g. by recapitulation with all students presenting.

## **D** *Feedback session*

Studies show that feedback significantly improves students' learning outcomes. The scope of this feedback is determined by the teacher and depends on the type of feedback. Individual peer feedback, where one student comments on another student's work (and vice versa), will often take two times five minutes, group feedback typically takes 10-15 minutes, while feedback in plenum may vary from 5 to 30 minutes. It is also possible to switch between oral and written feedback.

## **E** *Concluding reflection*

In order to enhance learning outcomes, we recommend a final reflection, where the students, after the activities in the theme, formulate and summarise the insights they have gained. This can be done digitally (e.g. via web applications such as Mentimeter, Padlet or Google Docs), individually (logbook, notes, wikis), in pairs (individually with comments or joint writing), in groups of three to five students (joint recap, wikis, posts or blog posts) or collectively (in plenary session, free discussion or orally).

## **F** *Documentation*

To help activate their new insights, students should collect and document their experience from each theme. This can be done via their existing devices, e.g. mobile phones (especially camera and microphone) and portable computers (especially archiving of images, videos and notes). The students can, for example, bring their mobile phones with them around the school or outside and collect additional materials for creative activities. These collected materials can be used for discussions, group work or individual assignments. IT tools could include Google Docs, Padlet, Evernote or Pinterest, or the school's own LMS (Learning Management System), such as OneNote Class Notebook or Google Classroom.

## *Suggestions for choice of activities*

It is often a good idea to start with an introduction to the learning outcomes and the theme by posing theme-based everyday questions to the students. This will ensure that the students feel that the selected theme is relevant and useful to them. This can be followed by a few practical exercises as a prelude to one or more larger, more in-depth exercise(s). Along the way, the Documentation activity can be brought in. After completing the exercises, the students can deliver a Presentation of their results, followed by one (or more) type(s) of Feedback as a basis for Final reflection on the theme.

## *Subject specific templates*

For less experienced teachers, it may be a challenge to assemble the contents for the three themes (as illustrated above) from the modular format of the training package. Moreover, limited preparation time is always a factor. The training package therefore contains a number of subject-specific templates, designed together with experienced teachers from the senior high schools involved in the CIBIS project. These templates provide specific examples of how 75-90 minutes teaching in each of the three themes might look for courses concerned with Innovation, Architecture and Language. This means that a teacher can simply follow the relevant template as a simple and effective approach to a course of lessons.

## *Iterations*

In order to enhance students' learning outcomes, it will often be useful to repeat a given activity, or an entire theme, later in a study programme. This might be done by setting them a practical exercise they have already performed, but this time with a new constraint or a different challenge. By means of such iterations, students will be enabled to gain an even better understanding of their own creative skills and ways of working in a creative process. This is the purpose of the CIBIS training package **BOOST YOUR C@Σ@T!V!TY**.

## Further reading

### Introduction

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