

ASSESSING THE VALUE OF SYNECTICS PRINCIPLES FOR BUSINESS STUDENTS

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Introduction

As lecturers in Entrepreneurship and Innovation Management we were struggling with the practicalities of sharing and imparting creativity skills to large classes of students (100 students on average in a final year class) and were intrigued by the Synectics approach.

We were introduced to Synectics by Truida Prekel, a founding member of SynNovation Solutions in South Africa, while attending a two-day workshop called WITS! (Workshop in Innovation and Team Skills). This particular SynNovation workshop is aimed at transferring practical skills that will enhance individual and group creativity to enable more innovative solutions to personal and/or professional problems. In this workshop we were first introduced to the basic principles, processes and creativity tools used in the Synectics process. We can still remember how, after completing the workshop, we first used the tools to solve routine personal problems and then later found applications in our professional environment. Our enjoyment of the process and first-hand experience in the successful outcome thereof prompted us to try and convince the University of Stellenbosch to make use of the Synectics approach (or at least use some of the principles and tools) in the creativity and innovation sections of the modules we teach.

However, to convince university authorities to provide more resources (e.g. financial, tutors, classrooms, time-slots) was quite a challenge. We consequently hatched a plan to convince other academics of the virtues of a Synectics based approach to transferring innovation skills. We conducted an experiment, with a pre-test (before any training took place O_1), a post-test (immediately after the workshop, O_2) and another post-test (three months after the workshop, O_3) with three different groups of students. We set about writing a research proposal, which entailed the two of us being trained as SynNovation facilitators; reasoning that if we were trained in the process we could provide/ share/ facilitate the workshops ourselves. Finally, our proposal was approved and with a shoe-string budget we sought the support of Truida Prekel who, thankfully, agreed to assist in the training part of the research.

Background / Context of university education in South Africa

Before the story continues – and in keeping with the SynNovation and Synectics style of doing – it might be useful to sketch a bit of background detail to colour in the picture. Universities across South Africa and specifically in the Commerce faculties face the challenge of teaching very large groups of students in each lecture opportunity. This is, to some extent, due to the limited infrastructure of higher education inherited by the current ANC government from their predecessors. The higher education system, which was designed by the Apartheid government for a minority of South Africans, now needs to serve the entire population and educate large numbers of students with limited and ever declining resources.

Additionally, lectures are generally very short (50 minutes). This is a very limited time to get the attention of a large group, share a lot of information and transfer skills if necessary. Due to the limited presentation time and large student numbers there are limited opportunities for interaction with students. In the first year, student numbers range from 180 to 300 students per contact session (lecture); students therefore learn from early on that they can get away with being rather passive in class, especially in subjects of a theoretical nature. As students continue to their second and third years this behavioural pattern becomes established and, save for the five or six talkative students who volunteer to participate in class discussions, many students remain passive and largely “invisible” in class. In this kind of context low energy levels prevail in class.

In subjects like Entrepreneurship, Creativity and Innovation Management this is highly problematic, since the individual student’s active participation is relevant and important to enhance their learning experience.

Another challenge that we experienced was that students are accustomed to thinking in a linear fashion, since most of their commerce subjects teach logical thinking patterns. They therefore find it challenging to think divergently and generate innovative (absurd) ideas, before settling on an idea for a project, potential new business or innovation. The university where we teach also tends to favour quantitative research in the positivist tradition – holding logic and rationality in high regard. At university we are taught analytical skills, to question everything and critically evaluate our own and others’ ideas and theories. But do these techniques cultivate creative and entrepreneurial individuals who drive innovation and progress in society?

These were some of the challenges we were facing at the time we took part in the WITS! SynNovation workshop, and we wanted to explore the possibility of introducing some of these “absurd” concepts into our academic modules.

What we did

As mentioned before, we drew up a research proposal, which was used to apply for funding. The purpose of the research was stated as follows: “To determine the effectiveness of the SynNovation approach in transferring innovation and creativity skills at a higher educational institution.”

We decided to use an experimental study to see whether students’ creativity, innovation and related skills would be influenced by a one-day SynNovation workshop, called “Toolbox for Brainwaves.” This workshop was able to accommodate larger groups, more or less 20 participants, and was ideal for the limited time we had available (to get students to attend a two-day workshop over a weekend would be near impossible). The Synectics principles and several “tools” for creativity were shared with the participants and in a hands-on approach they worked to solve personally experienced problems.

The participants used in the experiment were selected from the final year Creativity and Innovation Management class. These students had already been exposed to some creativity, innovation and entrepreneurial principles throughout their studies; in some respects, quite a tough audience. Participation was also completely voluntary and no

student was forced to take part; about two thirds of the class volunteered to take part to find out whether they could acquire any new skills.

Three workshops were held on different Saturdays over a two-month period, due to budget limitations on the Stellenbosch campus. Besides being exposed to the basic principles of Synectics, the participant group of 20 was split into two. The one group stayed in the venue where they had the opportunity to apply the skills (under the lens of a video camera!), while the second group were taken to an observation room (fitted with a television) where they could watch the other group's interactions and problem-solving skills. The groups then exchanged roles: one group doing, while the other learns by carefully observing. In this way, learning is enhanced by participants being able to view each other and recognise and identify the various roles and behaviours of group members interacting.

Before taking part in the "Toolbox for Brainwaves," students were asked to rate themselves on various aspects such as their knowledge of innovation and creativity principles, their own creativity skills as well as other related skills, such as communication, teamwork and problem-solving. Immediately after the completing the one-day workshop, they were again asked to rate themselves using a similar questionnaire. A final evaluation took place three months after the workshop. Students were asked to first think back to their initial skills level before the workshop and then rate their current (i.e. three months after workshop) skills level. This is important as it has been shown that participants in a training workshop might have very high scores immediately after the workshop, since they enjoyed it so much, but may after a period of time discover that no real skills transfer has taken place. On the other hand, they may also have rated their own skills before the workshop unrealistically (or immodestly?) high.

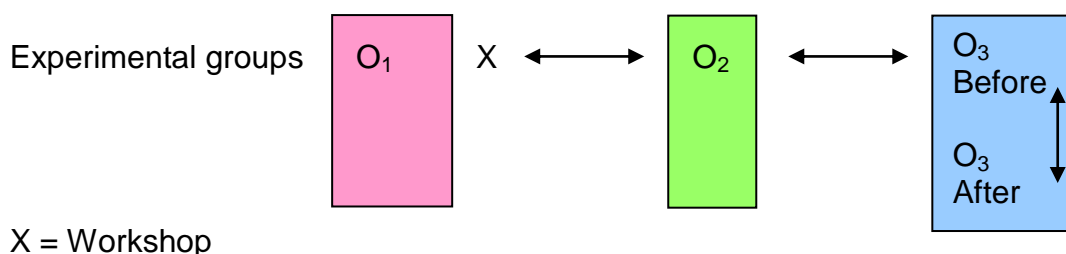


Figure 1: Representation of times of measurement

What was measured?

By using a questionnaire we were able to gain quantitative insight into students' perceptions of their own skills on various factors. The factors that were considered, included:

- *Knowledge of creativity and innovation:* Students were asked to rate their knowledge in terms of how positive behaviours stimulate creativity; tools for creativity and application of these to personal problems and problems in their studies/work; the use of creativity techniques in a group setting, and their innovation skills.

- *Communication skills*: Questions in this section referred to personal abilities to communicate; provide constructive feedback; time management when being creative; ability to build consensus, and; ability to trust others.
- *Creative abilities*: Several questions were asked pertaining to their abilities to solve problems creatively and innovatively; effective decision-making, and to look at problems from new perspectives.
- *Teamwork*: Students had to rate themselves on their listening skills; ability to work with others, to evaluate ideas in a positive manner, and to receive the suggestions from team members.
- *Problem-solving*: Finally students were asked to assess their ability to solve complex problems, while maintaining high energy levels.

Students' experiences and comments on the workshop were also captured on the same questionnaire in the open-ended section.

Outcomes

The results from the experiment confirmed that all participants rated themselves significantly better after having participated in the “Toolbox for Brainwaves” workshop, and these skills seem to stay with the participants over time. Most of the factors displayed a similar pattern to that illustrated in Figure 2, when the average scores for all three groups of students were compared on the various factors.

In Figure 2 *creative ability* is shown as an example that is typical of the results for the other factors tested as well, using a box plot.

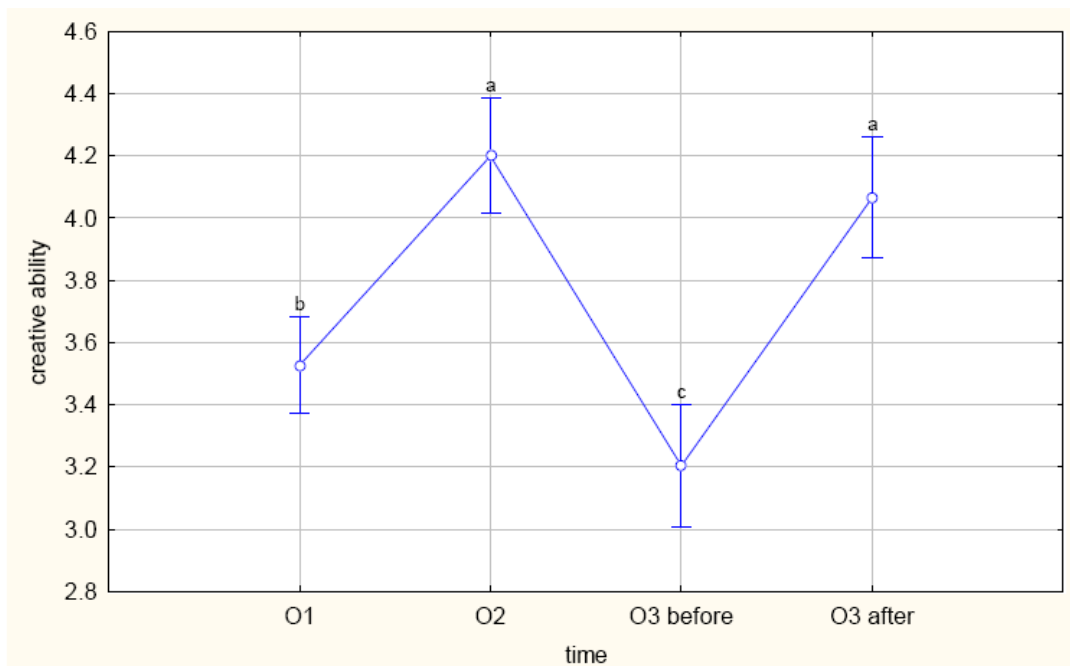


Figure 2: Box plot of the change in creative ability before and after the workshop

Represented on the x-axis are the different evaluation points in time where students assessed their own skills. As shown, O_1 represents the first measurement before the workshop, O_2 represents the measurement directly after the workshop, and O_3 has two measurements, where O_3 *before* is an indication of students reflecting on their skills before the workshop (should be comparable to O_1) and O_3 *after* shows their current skills level (three months after the workshop). The different letters above each average provide an indication of how similar or different the average scores are. As can be seen in Figure 2, students generally rated themselves above the mid-point (2.5) of the scale, while their skills still significantly improved after the workshop (O_2). When they reflected after three months, they thought their initial skills were perhaps not as highly developed (O_3 *before*) as they had thought initially (O_1), however their current skills (O_3 *after*) are still comparable to directly after the workshop (O_2).

A similar pattern was reflected in all the other factors that we measured, namely knowledge of creativity and innovation skills, communication skills, teamwork and problem-solving.

Conclusions

With these results in hand we are now able to show (with quantitative statistics) that the Synectics principles are very effective even with a group of students who have been exposed to entrepreneurship and innovation management courses and who tend to know more than the average university student about these subject areas. Besides the fact that the students enjoyed the workshop tremendously, their self knowledge was also improved and the class climate and contribution levels were more positive after their participation in the workshops.

The Synectics principles, that SynNovation apply and transfer in their workshops, can be used to impart to students the difficult skills that are necessary throughout the innovation process (not only in idea generation). One or more team(s) might be involved in any given innovation project, and not only knowledge of creativity and innovation or creative abilities are needed, but also communication skills, teamwork and problem-solving.

We should now be able to incorporate these principles into our modules and share with students the importance of divergent and convergent thinking during problem-solving. The generic skills transferred during the workshop should enable students to exit the University as more well-rounded individuals equipped to face challenges in the business world, where innovation has become a strategic success factor.