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In this edition we are lucky to have three writers who have contributed to this month's article. **Helge Löbler** is Professor of Management and Marketing and director of the Institute for Service and Relationship Management at the University of Leipzig, Germany. He studies Cybernetics and Economics at the universities of Stuttgart and Bonn and holds a PhD in Economics. He received an award for his outstanding contributions to the 12th International Colloquium in Relationship Marketing. He has lectured at many international universities in Europe and extensively in the United States and China. In 2006 Professor Löbler and a colleague established the SMILE programme (Self Management Initiative in Leipzig) which has supported more than 450 start-ups since its inception.

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Evaluating the constructionist approach in entrepreneurship education

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ABSTRACT

In trying to apply a 'new' approach in education, we used Löbler's (2006) ten principles for entrepreneurship education. After two years of fine-tuning and improving the programme, we were interested in evaluating it and comparing it to other learning approaches mentioned in the literature and used in practice. The goal is twofold: Firstly, we wanted to find out whether the 'constructionist' learning environment does support autonomy in thinking and doing. Secondly, we were interested in figuring out if the students learned more and kept working harder while being more motivated on their projects compared to the other learning environments.

The results show that this kind of 'constructionist' coursework is superior with regard to many criteria and preferred by the students compared to the other learning approaches. The students also reported that they worked with much more enthusiasm and delight. Our analysis shows that the ten principles are working in practice and could be an advantage for students and teachers.

KEYWORDS

Entrepreneurship Education

Constructivism

Evaluation of Learning Environments

Learning Effectiveness

Learning Motivation

INTRODUCTION

The literature on entrepreneurship education is demanding for new formats inside and outside the classroom (e.g. Gibb, 1998; Kourilsky & Waklstad, 1998; Sternberg et al., 2000; van der Kuip et al., 2003). Many different formats already exist, from classical lectures to small business consulting and internships (e.g. Solomon et al., 2002; Koch, 2003). Still, 'Assessed as a whole, with some risk of oversimplification, it can be argued that the field's (entrepreneurship education, the authors) emphasis has been – pragmatically – more about entrepreneurial didactics and much less on developing their conceptual underpinnings' (Laukkanen, 2000: 28). There is a need for a conceptual underpinning of entrepreneurship education, a pedagogic paradigm that not only puts together the different puzzle-pieces of the different formats but can also serve as an entrepreneurship educational paradigm. Such a conceptual basis could also serve as a strategic starting point for designing an entrepreneurship and other education programmes where independent thinking and doing is in the foreground. Löbler (2006) has applied the constructionist approach as a conceptual pedagogic paradigm to entrepreneurship education and has developed ten principles as guidelines for designing programmes for entrepreneurship and other fields where independent thinking and doing is the focus (Löbler, 2006).

Using these guidelines, we started to develop a programme that fosters students' autonomy and self-reliance and facilitates the sustainability of the acquired knowledge. The main goal of the programme is not to transform students into entrepreneurs but to develop their independent thinking and doing in cooperation with others, i.e. to foster their entrepreneurial spirit without the necessity to start their own business.

THE PRINCIPLES EMBEDDED IN THE PROGRAMME

When we started to design the programme for graduate students, we found that they had already acquired a lot of fragmented knowledge like finance, marketing, strategic planning, etc. However, we also found that they did not know what to do with their knowledge. They resembled a piano player who has never seen a piano but theoretically knows how to play it. What we do is put the students in front of the piano and let them play (principle 1, Löbler, 2006). How is this done in a practical programme? We let the students themselves form teams of four to six individuals around an entrepreneur who is in the process of starting her venture. The entrepreneurs and their start-up are selected from real entrepreneurs in the region. The most appropriate start-ups are selected as a learning environment. Then we brief the entrepreneurs to give a presentation and convince the students via that presentation to work with them. We start the programme with five to seven of these presentations given by the entrepreneurs. The presentations are about their business idea and contain several questions on which the entrepreneurs want to work together with the students. Because the venture ideas are not only related to different industries (from construction to biotech) but also to different regional extensions (from local business to nationwide franchise), the students can choose within a wide range of opportunities and learning-goals.

According to principle 2, students have to decide based on these presentations with whom they want to cooperate. Here it happens that some entrepreneurs do not find students to work with. It is a bit like a competition when the entrepreneurs have to compete for good students. Before the presentation, the entrepreneurs are briefed that the students and not the entrepreneurs decide with whom and on what questions they are going to work together. In this way, the students select their learning content and their learning goals out of the set that is given by the entrepreneurs (principle 3). After all the students chose 'their' entrepreneur, they have a meeting with her to discuss the further work. In the first meeting, students and entrepreneur discuss the specific goals of their joint work, fix them and send us the minutes of their first meeting.

For the information transfer between students, entrepreneurs and teachers we use an internet-based learning platform. This platform serves for all kinds of information the students need or want to share with others. This assures an open information flow between all partners of the programme (principle 6, Löbler, 2006). On the other hand, the student team can restrict access to team members and 'their' entrepreneur to keep data confidential if necessary. In addition, all participants can use the platform as online data storage, as discussion forum, as message manager and for other purposes (principles 6, 7 and 9).

Still, the face-to-face work is the most important part of the learning process. The students are challenged to argue and to defend their ideas in several levels of discourse. The first level of discourse is within the team of students where they discuss their individual ideas to create a team idea. The second level of discourse is between the team and the entrepreneur; the third is between the team and representatives of local banks and other institutions. The most important discourse level in the learning process is the discourse between the students and us as teachers/coaches. This takes place on demand of the students typically once a week. Here the students and we reflect their other levels of discourses as learning experiences. Therefore, we assure an interplay between doing (gathering experiences) and reflecting/thinking. This interplay of doing and reflecting assures the most effective learning process according to constructivist pedagogy. 'The student tries to make sense of what

is thought by trying to fit it with his or her experience' (Lorsbach & Tobin, 1992) (principles 5, 8 and 9, Löbler, 2006).

After half of the programme, students have to present their work as an interim result. This presentation is not part of the grading; it serves as initiating point for a discourse between all participants in the programme.

At the end of the programme, the students have to present the final results of their work. It sometimes happens that students recommend not starting a specific venture, or starting it in a very different way.

Following principle 4, the final grading is a two-step process: in the first step the entrepreneur and we as teachers/coaches evaluate the work of the students. Now the students can choose a percentage between 0 and 100 to weight the entrepreneurs' evaluation for the final grading. Therefore, the weight of our evaluation in the final grading is 100 minus the weight of the students' chosen percentage. Of course, the students have to choose this percentage before they know the evaluations. In a second step, a peer evaluation can change the final grading. Students are free to evaluate their peers. If the whole team gives a peer evaluation, we change the final grading up to one-third of a grade in a positive or negative direction (e.g. B to B+ or B–). According to principle 4 there is no final test or final assessment.

METHODOLOGY

To figure out whether this programme as a learning environment is superior to other learning environments we used the students' experiences they made during the learning process on motivation, enjoyment of learning, engagement, workload, intensity of learning, effectiveness and sustainability. The students were asked to evaluate five different learning environments according to the above-mentioned criteria using the German grading system that ranks from 1 (excellent) to 6 (fail). While most of the criteria evaluate the learning process, sustainability goes beyond the learning process, because it can be seen as a learning outcome.

In addition, we used four content-oriented variables: thinking about entrepreneurial behaviour, getting new insights about entrepreneurs, getting new insights about the start-up process and getting new insights in the creation of a business plan.

As control variable, we used the grade. We used this variable to exclude the simple halo-effect that a positive grade causes a positive evaluation and a negative grade causes a negative evaluation. The halo-effect can be neglected if the variable concerned does not correlate with the grading.

The different learning environments the students had to evaluate were lecture, exercise course, seminar (all students present a literature-based coursework to the others), lectures by practitioners and our entrepreneurship course as described above. The first four learning environments are very common in German universities, and all students were familiar with all these types of environments. We had to exclude case studies as a learning environment, because not all students were familiar with it.

Three months after the end of the course, we sent questionnaires to all students who participated in the entrepreneurship course. Sixty-eight students participated in the programme within the last two years. Table 1 shows the number of students in each course as well as the number of respondents. Therefore, we had 50 fully completed questionnaires for the analysis.

Table 1: Number of students and fully completed questionnaires

	Winter Term 2002/3	Summer Term 2003	Winter Term 2003/4	Summer Term 2004
Number of students	18	19	14	17
Fully completed	13	14	11	12

The average age of the students participating in the programme was 24 years. Within our sample, we had 50% females and 50% males. The students had different backgrounds and different majors in their studies. A total of 26% of the participants have their major not in business administration but in mathematics or social sciences. In addition, six of the participants are doing a double degree in Business Administration and Economics. The data are summarised in Table 2. This shows that entrepreneurship and the constructivist environment, used for an entrepreneurship education programme, are also interesting for students of other majors than business administration.

Table 2: Students' majors

Major	Number of students
Business Administration	37
Economics	6
Mathematics	8
Social Sciences	5

RESULTS

To compare the learning environments, we calculated the means and variances for all the items and for each learning environment as shown in Table 3. Asterisks indicate significant differences (t-test) compared to the entrepreneurship course. For motivation, we see a mean of 1.5 for entrepreneurship course and of 3.6 for a lecture that is significantly inferior to 1.5. For all the means, we used a scale from 1 to 6, where 1 means 'excellent' and 6 means 'insufficient'.

Table 3: Means and (variances) of learning process items

	Entrepreneurship course (b.C.P.)	Lecture	Exercise	Seminar	Practitioners' lecture
Motivation	1.5	3.6**	3.1**	2.7**	2.0**
	(0.6)	(1.5)	(0.9)	(1.0)	(0.6)
Effectiveness of learning-process	1.8	3.8**	2.7**	2.4**	2.9**
	(0.9)	(1.5)	(1.0)	(0.6)(	1.4)
Sustainability	1.8	4.2**	3.2**	2.8**	2.8**
	(0.6)	(1.2)	(1.4)	(1.2)	(1.2)
Enjoyment in learning	1.8	4.1**	3.5**	3.0**	2.4**
	(0.9)	(1.5)	(1.6)	(1.4)	(1.1)
Intensity of learning					
	1.7	3.7**	2.6**	2.4**	2.8**
	(0.7)	(1.5)	(0.9)	(0.9)	(1.0)
Engagement	1.4	4.1**	3.0**	2.4**	3.4**
	(0.3)	(1.9)	(1.3)	(1.1)	(1.7)
Workload	1.4	4.0**	2.9**	2.6**	3.6**
	(0.7)	(1.3)	(0.8)	(0.9)	(1.5)

** $p \leq 0.01$, indicating that the particular environment is significantly different to the Entrepreneurship course.

The results give strong support to our design of the programme comparing the variables concerning the learning process. It also supports the ten general principles used to design the course. Having a superior learning environment does not necessarily mean a better learning of specific contents.

Our four variables concerning the content of the course also show strong support for our course design (see Table 4). It is superior concerning the discourse on entrepreneurial behaviour, not surprisingly given that the students work in groups with the entrepreneurs and others (teacher, banker, lawyer, etc.). Secondly, it is superior in getting new insights into the entrepreneurial process. The students get at least three months of experience together with an entrepreneur. During that process they also work on the business plan, so it is not surprising that working out a real business plan is superior to other learning environments concerning insights into business plans. There is only one exception where the practitioner's lecture comes close to the constructivist environment, and that is the new insights on entrepreneurs. Typically, these lectures are enriched with historical content and many stories about the entrepreneur. In addition, the lectures of practitioners are very authentic. Table 4 summarises these results.

Table 4: Means and (variances) of the content-based items

	Entrepreneurship course (b.C.P.)	Lecture	Exercise	Seminar	Practitioners' lecture
Discourse on entrepreneurial behaviour	1.4 (0.45)	4.2** (1.80)	3.7** (1.55)	3.0** (1.28)	2.0** (1.00)
New insights on entrepreneurs	2.0 (0.69)	4.1** (0.96)	3.8** (1.32)	3.0** (1.70)	2.1 (1.08)
New insights on entrepreneurial process	1.9 (1.32)	4.2** (1.58)	3.8** (1.77)	3.0** (1.75)	2.4** (1.42)
New insights into business plans	1.9 (1.08)	3.8** (1.78)	3.3** (1.95)	2.8** (1.97)	2.8** (2.19)

** $p \leq 0.01$, indicating that the particular environment is significantly different to the Entrepreneurship course.

Table 5: Correlations between course evaluations and grade

	Motivation	Effectiveness of learning	Sustainability	Enjoyment	Intensity	Engagement
Grade	0.039	0.236	0.062	0.171	0.164	0.071

	Workload	Discourse on entrepreneurial behaviour	New insights into entrepreneurs	New insights into entrepreneurial process	New insights into business plans
Grade	0.265	0.052	−0.070	0.237	0.618**

** $p \leq 0.01$

To test the halo-effect that a positive grade causes a positive evaluation and a negative grade causes a negative evaluation, we calculated the correlations between all items and the grades the students got in the entrepreneurship course. The results are shown in Table 5.

The only significant correlation is between grade and insight into business plans. This is not surprising because we use the final business plan the students worked out for at least 50% of the grading. The other part of the grading is the entrepreneur's evaluation of the cooperation with the students. Since there are no other significant correlations, we can neglect a halo-effect from grades to evaluation.

Furthermore, we looked at the importance of the grades compared to the learning outcomes in the students' evaluation. Having seen that the motivation in the constructionist environment is superior to the others, the question is whether this motivation is internal or external. In other words, we want to see whether the students are motivated because of getting a good grade or because they appreciated the topic. Therefore, we asked 'How important is the grade compared to the acquired knowledge?' We used a scale from −3 to +3 (−3 = 'grade is most important', +3 = 'knowledge is most important' and 0 = 'it equals up'). We found a mean value of 0.4 in the constructionist environment and a mean value of −1.4 for the lecture. This indicates that the grades still play an important role in our entrepreneurship course but much less than in the lecture. It also shows that the acquired knowledge is significantly more important than in the lecture. The difference between this means was tested with a t-test and was significant at the 1% level.

Even though we did not design the course to 'produce' entrepreneurs, we asked whether the students intend to start a venture with a partner. We used a scale from 1 to 6, where 1 means 'strongly intend' and 6 means 'do not intend at all'. We found the following interesting correlations between the students' evaluation of the course and the intention to start a business with a partner (see Table 6).

The first significant correlation in Table 6 is between intention to start a venture and effectiveness of learning. Since we cannot clearly identify from the data which variable is cause and which is effect, the correlation could indicate that the students who intend to start a business use the learning environment more effectively for their goals. It could also mean that the more effectively the students learn the more they want to start a business. We could also think that individuals with a strong entrepreneurial personality do learn effectively and therefore intend to start a business. In this case, the entrepreneurial personality would be a hidden variable in that correlation. The next highly significant correlation is with enjoyment. Enjoyment of the learning process seems to be an important issue as it fosters learning. The other three highly significant correlations are with the topic of entrepreneurship (discourse on entrepreneurial behaviour, new insights into entrepreneurial process) but here also we cannot identify cause and effect. This cannot be answered with our data. Therefore, these questions remain for further research.

DISCUSSION

Designing an entrepreneurial course on the basis of ten constructivist education

Table 6: Correlations between course evaluation and intention to start a venture

	Motivation	Effectiveness of learning	Sustainability	Enjoyment	Intensity	Engagement
Intention to start a venture	0.231	0.446**	0.339*	0.457**	0.240	0.281

	Workload	Discourse on entrepreneurial behaviour	New insights into entrepreneurs	New insights into entrepreneurial process	New insights into business plans

* $p \leq 0.05$; ** $p \leq 0.01$

principles (Löbler, 2006), the main goal was to evaluate the design and indirectly the principles in comparison to other learning environments.

Two important goals of the constructionist learning environment are to foster independent thinking and doing. Since independent doing and thinking were not measured directly, we used two indicators as to whether or not there is some ground to deduce these phenomena. On the one hand, the theoretical workload of the course should be the same as in other learning environments. As we have seen in Table 3, the students indicated a much higher workload and engagement for the entrepreneurship course compared to all the other learning environments. Since no hint was given to the students what to do and when, it was their independent decision about the amount of 'doing'. On the other hand, the students got only a problem and we did not show how to solve it, even though they did excellent jobs in the perception of different evaluators (entrepreneurs, institutional representatives, coaches). Furthermore, the importance of the learning outcome compared to the achieved grade gives support for our hypothesis that the course environment fosters independent thinking.

Still, the intention of the course was not to educate entrepreneurs, but to give the students an inside view of the world of entrepreneurship. Even though we found students with a strong intention to start a business with a partner, with our data we cannot figure out whether this intention was fostered by the learning environment we offered or whether it already existed before the students were confronted with the learning environment.

We found that the entrepreneurial course is superior to the learning environments investigated here. The students not only work harder and are more motivated, they also enjoyed the learning process significantly more compared to classical environments. We also can exclude an impact of the grades on the students' evaluation, meaning that the superiority of the course is independent of the grades. Furthermore we found that the students got more insights into entrepreneurship compared to the other learning environments.

In one-to-one interviews with students, they appreciated their experiences and the reflection on their experiences. Some of the students started their own business, some of them got a job from the entrepreneur they worked with and three of the groups got start-up awards.

Some questions we did not answer, including , given the fact that this course is not obligatory, whether there may be a self-selecting bias in the sense that students who like this way of learning choose this course. We also did not analyse whether this learning environment is more supportive for the personal development of the students compared to the other learning environments. Closely connected to the personal development is the question whether this course supports independent thinking and doing. Nevertheless, here the question arises how we can measure independent thinking.

May 2021 Postscript

Roughly, 20 years ago I started to think about constructionism and learning to get a better understanding of what learning is all about. The motivation behind my inquiry was (and still is) my conviction that I need to understand learning if I want to support learners. When discussing this with colleagues and others, I often felt far removed from what they were up to, because during that time, for many supporting learners was just classic teaching (showing, presenting, guiding, instructing etc.). Therefore, I stepped into psychology, pedagogic and most important neuro science. In 2006, I published an article (Löbler, 2006) where I claimed ten principles for supporting entrepreneurial learning. The essay originally had nothing to do with entrepreneurship. The ten principles formulated therein are generally suitable for promoting independent and critical thinking and independence of a learner. However to get it published I focused it on entrepreneurship. Of course, we examined our approach using the usual methods and standards. We published the results again in 2019 (Löbler, Maier, & Markgraf, 2019).

The more I learned about learning I figured out, that the ten principles with their background reflect what I now call 'natural learning'. Natural learning is the way of learning that humans would practice if there were no schools or any teaching institutions. It is the way kids learn before they go to school. This kind of learning was developed by evolution through thousands of years. It is probably the best way of learning for humans; Why not using it? By no means I am saying that formal education is obsolete. However, there are so many options to learn from nature and to better understand our abilities to learn as well as to support learning.

When little kids learn, they do not even know that it is learning. It is mainly 'playing' it is exploring the world. When adults do their hobbies, they neither experience this as learning, it is bowling, playing tennis, doing music and all the joyful activities we do to entertain others and ourselves. We cannot do all this without skills and knowledge. Fortunately, many of us have learned all this outside of schools, universities and other 'formal educational institutions'. We mainly have learned this through attention, enthusiasm and practicing. Because it is or was in some sense 'our element' as

wonderful presented by Robinson (2010). In natural learning, there are usually no teachers, professors or other 'qualified people' to evaluate the doing. If anything, what we do is measured against reality. In this sense 'live' is the teacher. Live here is understood as a social construction of humans, nature and technology. Kids are naturally curious; they want to learn I should better say they want to explore the world. They want to find their "element". Robinson's book is wonderful source for kids' searching and finding their element (often against formal education) and developing themselves and their activities to famous careers. Let us give kids the opportunity to find their element; so that they really become what they are. ■

REFERENCES

Gibb, A. (1998) 'Entrepreneurial core capacities, competitiveness and management development in the 21st century'. Paper presented at the IntEnt-Conference, Lohmar, Germany, July.

Koch, L. T. (2003) 'Theory and practice of entrepreneurship education: a German view'. *International Journal of Entrepreneurship Education*, 1(4), 633–60.

Kourilsky, M. L. & Waklstad, W. B. (1998) 'Entrepreneurship and female youth: knowledge, attitudes, gender differences and educational practices'. *Journal of Business Venturing*, 13(1), 77–88.

Laukkanen, M. (2000) 'Exploring alternative approaches in high-level entrepreneurship education: creating micro-mechanisms for endogenous regional growth'. *Entrepreneurship & Regional Development*, 12(1): 25–47.

Löbler, H. (2006) 'Learning entrepreneurship from a constructivist perspective'. *Technology Analysis & Strategic Management*, 18(1), 19–38.

Löbler, H., Maier, M. & Markgraf, D. (2019) 'Evaluating the constructionist approach in entrepreneurship education'. *Research in Teacher Education,* 9(2), 46–51.

Lorsbach, A. & Tobin, K. (1992) 'Constructivism as a referent for science teaching'. In F. Lorenz, F., K. Cochran, J. Krajcik & P. Simpsons (eds.) *NARST research matters – to the science teacher*, pp. 5–7. New York: National Association for Research in Science Teaching.

Robinson, K. (2010) *The element: How finding your passion changes everything.* Concordville, Pa., Norwood, Mass. Soundview Executive Book Summaries; Distributed by Books24x7.com.

Solomon, G. T., Duffy, S. & Tarabishy, A. (2002) 'The state of entrepreneurship education in the United States: a nationwide survey and analysis'. *International Journal of Entrepreneurship Education*, 1(1), 1–22.

Sternberg, R., Otten, C. & Tamásy, Chr. (2000) *Global entrepreneurship monitor*: *national report.* Cologne.

van der Kuip, I. & Verheul, I. (2003) 'Early development of entrepreneurial qualities: the role of initial education'. *International Journal of Entrepreneurship Education*, 2(2), 203–26.