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Teachers' conceptions of student creativity in higher education

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ABSTRACT

Creativity is one of the important skills of the twenty-first century and central to higher education (HE). When we look closer into research on creativity in HE, however, it is not clear how university teachers conceptualise student creativity. How do teachers grasp, observe and express student creativity? Different methods such as interviews and online questionnaire have been used in this study. From the teacher perspective, student creativity expressed through (1) student self-reflections, (2) independent decisions, (3) through curiosity and motivation, (4) producing something, (5) multiperspectives and (6) when students develop original new ideas. The results provide a new understanding of student creativity from university teachers' perspective that is useful for re-organising course designs.

KEYWORDS

Creativity; higher education; data-grounded framework; empirical study

Introduction

In a funded project (2008–2011), the goal was to analyse creativity in European universities. One interest was to reveal the status quo of creativity opportunities in courses and in study programmes. The purpose was to gain knowledge about how to support and foster creativity in higher education (HE). The study aimed to make courses more creative while supporting teachers and students. The project team initially assumed that a clear definition of creativity existed. However, it quickly became clear that there is no general formulation of what creativity is and what it is not. Instead, different studies about creativity illustrate that basic agreements are lacking, even contradictory understandings are available (e.g. Amabile, Hadley, & Kramer, 2002; Beghetto & Kaufman, 2007; Gardner, 1993). Sternberg (1999) and Bennich-Björkmann (1997), both argue that something is seen as creative when it is novel but also has a value for someone. We began with such a definition. However, pilot interviews with teachers demonstrated that student creativity cannot be reduced to being novel and having a value; when students are creative, this can be labelled as novel for students and teachers but it has little or no value for experts in the community. This insight led the project to the research question of what creativity is from the teacher perspective.

Theoretical frame: creativity in HE as a subjective observation category

International studies show different levels of creativity, some target person and product, others analyse creative processes and creative environments (Guilford, 1956; Herrmann, 2009; Kleiman, 2008; Watson,



2007). Studies of creativity in HE face the challenge that undergraduate students do not produce regular products for a market; they are not seen as entrepreneurs or inventors, which makes it difficult to apply existing understandings of creativity as highlighted by Cropley and Cropley (2010) about recognition of creativity in technological design education. It is difficult for teachers to 'see' and discover what a creative effort is and how to evaluate it (Byrge & Hansen, 2008; Thompson & Lordan, 1999). Bleakley concludes (2004), 'While there is agreement that creativity is central to teaching, learning and curriculum in HE, what is meant by creativity is not always clear' (p. 463). Approaches that combine concepts of creativity in HE into course designs are still quite rare (McWilliam & Dawson, 2008; Zhou, 2012). The outcome of such studies is then often an extremely reduced understanding regarding how to teach for creativity, such as 'Explain less, welcoming errors'. Jackson (2010) and Jackson, Oliver, Shaw, and Wisdom (2006) therefore established a way where they did not ask 'what creativity is?'. While avoiding a universal definition, they emphasise that teachers and students have different concepts of creativity, i.e. they applied a pluralistic view (Imaginative Curriculum Network). This creates the challenge that everything can be labelled as creative.

One of the attempts to create a general definition is given by Sternberg (1999): 'Creativity is the ability to produce work that is both novel (i.e. original, unexpected) and appropriate (i.e. useful, adaptive concerning task constraints)' (p. 3). Creativity is defined as something new, valuable or useful for a particular group. In Sternberg's perspective, creativity is related to someone who assigns value to the novelty. This seems to be an appropriate candidate for defining creativity in HE, but the question remains of whether only a breakthrough event makes someone be seen as creative or if an undergraduate student can also be creative. Is a person singing in the shower or a painter creative? Is a student who develops an 'app' instead of writing her study results in a traditional contribution creative or not? Some people might label those actions creative, others not – but it might be that for the person who made the effort label herself creative because for her it is novel and has a value. This reveals, 'if' someone or something is labelled creative depends on the context. This points to a shift in recent discussions about creativity. An external person or community does not need to see a value to label something creative (Csikszentmihalyi, 1999).

May's definition (1994) is more promising. Creativity is the process of making and bringing something new into being. His focus points to realising ideas in the literal sense of creating. The creation of new ideas without realising them is rather a form of imagination. However, May also advises 'scepticism' towards current theories of creativity; 'Does the theory deal with creativity itself, or does it deal only with some artifact, some partial, peripheral aspect, of the creative act?' (p. 38). This question is still important as several approaches of creativity in HE only deal with partial aspects of creativity. For example, theories with regard to creative learning tend to focus on smaller snippets of creativity such as Adriansen (2010). She draws a strong connection between criticality and creativity, regarding critical thinking as a key factor for affecting student creativity. Raiker's work (2010) emphasises the importance of reflection for creativity in learning processes. Brodin and Frick (2011) studies about doctoral education states 'that critical and creative thinking are closely interrelated components in gualified and hence responsible scholarly thinking' (p. 135). Lange (2010) exposes 'learning through creative conversations' (p. 173). All these approaches are valuable contributions in the field of creative learning. However, they all focus on small aspects of creativity; the bigger picture of creativity in HE, as stated by May (1994), is still missing. Especially, the relation of creativity concepts, creative learning and the course design is under-researched.

An alternative contribution is provided by Beghetto and Kaufman (2007). They build a differentiated model of creativity that exists on individual, group and community levels in which the Big-C represents rather the great mind approach, Little-C stands for everyday creativity and Mini-C is an intrapersonal creativity that occurs in learning processes. The singing person example fits to Little-C and the student's app would possible be assigned to Mini-C. Beghetto and Kaufman's model also illustrates the fact that creativity occurs in interaction of small groups or even in larger organisations and takes part as individual, social and collaborative creativity (Herrmann, 2009).

To summarise, creativity is not an objective category – rather, it depends on the individual person whether she labels another person or product/process as creative or not. Creativity depends on the position of the observer and is a category where teachers *watch* creativity; they label someone/some-thing as creative. Creativity is then a *subjective observation category*. This view exposes creativity as a subjective category that is separated from the discussion of the acceptance of novel ideas and innovations as social practice (Rogers, 2003). These insights give some hints, but no clear answer, of what student creativity is and how their creativity could be fostered.

An appropriate concept includes a contextualised operationalisation that is easy to handle for university teachers that allows integration into course designs, is still lacking. Instead of creating a definition of creativity in HE from outside, such as 'researchers tell teachers what creativity is', we aimed to study the *inside* view: how university teachers grasp, explain and describe creativity. Teachers inform research. In what ways do teachers 'see' the process of students bringing something new into learning? What indicators do teachers use, how do they express them? We assume a pluralism and diversity of teachers' understandings towards student creativity due to different reasons (e.g. discipline, person, context).

Methods – study design

An explorative approach was applied where teachers describe how they perceive and conceptualise student creativity. To collect the data, the project team Didaktik that was part of a larger 3-year project funded by the BMBF,¹ followed a triangulation approach in order to establish the validity of the mainly qualitative study (Guion, Diehl, & McDonald, 2011). The research about teachers' conceptions of student creativity in learning was one component of a larger project.

First, 20 interviews with university teachers in 2009 were conducted (in-depth interviews, 1–5 h, mean = 90 mins). Half of them were recognised for excellent pedagogy, award-winning teachers, who had been highly rated by students. They represent different disciplines (economics, mathematics, geography, cruise management, art, history, engineering, psychology and Latin). The other 10 were from pedagogy departments.

The interview guide was partly structured. The teachers were requested to describe one of their courses in detail, for example, teaching objectives, learning activities, assessments, structures, content, how the course was related to creativity, how the teachers supported student creativity. The researchers asked explicitly, 'How can you'see', if/when a student is creative? How do you know that your students are creative? What is a creative effort by your students?' The interviews were audio-recorded and transcribed. Notes were taken. The interviews were analysed by means of 'open coding' (Bryman, 2008). The researchers analysed each of the interviews in detail in order to analyse what the interviewes said that their understanding of creativity is. Finally, all interviews were compared, then analysed, condensed and summarised on a higher level.

The interview data were used to derive a first theoretical model, a data-driven conceptual framework. Categories were explored that we call Facets of Creativity (results are in the Findings section). Since it was not possible to say whether this Facet-model is only valid for the interviewees or also valid for other teachers, we therefore created a broader online questionnaire.

In 2010, we conducted the online questionnaire, non-standardised. The link to the online survey was sent to all teachers at UAMR (University Alliance Metropolis Ruhr) to find out to what extent they confirm the conceptual framework or not. The aim was to empirically explore the model, the six facets of student creativity in detail, in particular how the teachers look at student creativity. The online questionnaire consisted of two steps:

- Teachers were asked, 'What is a creative effort of your students in your course?'This was an open question with three open fields in which to write answers.
- (2) Teachers were asked to match the answer that they gave to question No 1 to one or more of the six facets, originally developed from the interviews. Technically, the open answers given by the teachers to question No 1 were automatically transferred to question No 2. Question No 2 then asked the teachers to match their answers to the six given facets of creativity, either one, several or none ('Does not fit'); this part of the questionnaire consisted of closed-ended questions.



Figure 1. Respondents' distribution regarding disciplines.

The communicative content validation was made by means of inter-subjective testing (Bryman, 2008). The teachers' quotes, and how they assigned their given answers to one or more of the six facets, have been verified by three external persons. Overall, the results of the external testers matched with how the respondents categorised their own quotes.

Findings

The findings first present data from teachers' interview responses to 'How can you'see', if/when a student is creative? How do you know that your students are creative?'

Typical answers are, 'when the student constructs knowledge rather than adopting it,' when students have an internal dialogue', 'when they break out of a receptive posture' and 'when they are critical'. The answers have in common that they focus on reflecting information, transforming it into knowledge, and they emphasise the importance of reflective knowledge production rather than knowledge consumption. We call this cluster *self-reflective learning* (Facet 1).

A second cluster of answers by interviewed teachers relate to independent learning such as 'making own decisions'. A typical teacher quote is that student creativity can be seen 'when the students take the responsibility for steering the processes of her/his learning' and in particular the answer 'when the students make own decisions' was given in almost all interviews. We call this cluster *independent learning* (Facet 2).

A third facet was more difficult to name. The teachers recognise student creativity in a form of 'being engaged', when students show curiosity and motivation. This kind of student engagement is expressed by the interviewees as 'when the students are curious about the topic', 'when they are engaged and motivated to learn', 'when they ask the right questions', 'when students use their own experience and connect it to my course', 'when they show interesting ways to pose questions or problems', 'a link from the theoretical topic to practice' and 'when the students use metaphors and humour to visualise the theoretical field'. We categorised such expressions into Facet 3 and name it *showing curiosity and motivation*.

A fourth category of answers relates to producing something. Interviewed teachers said, 'I can see student creativity when they create something,' when they create products', and 'when students conduct projects (e.g. planning a congress)'. The Facet 4 is named *producing something*.

A fifth rubric of answers relates to a change of perspective. The interviewed teachers said that they can 'see' student creativity when a student has more than one perspective to the same topic, when the student knows that there exist contradictory meanings and opinions and can deal with the differences



Figure 2. Distribution of the six facets - teachers' conceptions of student creativity.

in argumentation and opinions. Typical answers from the teachers include 'When the students change their perspective' and 'Dealing with ambiguities'. Facet 5 is called *showing multi-perspectives*.

A sixth facet reveals a focus on 'new ideas'. Typical answers include 'When the students have totally new ideas' and 'New ideas, what I as a teacher never knew and never saw before'. This facet is therefore called '*reaching for original, entirely new ideas*' (Facet 6).

To summarise, six clustered facets (F1–F6) of teachers' conceptions of student creativity in learning were derived. Teachers express student creativity in terms of

- F1 Self-reflective learning
- · F2 Independent learning (organising decisions for learning autonomously)
- F3 Showing curiosity and motivation
- F4 Producing something
- · F5 Showing multi-perspectives
- F6 Reaching for original, entirely new ideas

The remarkable extent of recognising creativity in HE across all facets is mainly based on the 10 interviews with the award-winning teachers from various disciplines, while the 10 teachers from the field of pedagogy showed a clear position that creativity in HE is focusing on F1 self-reflective and most importantly on F2 independent learning. This might be an indicator that the disciplinary background has a fundamental impact on understanding creativity in HE. Another explanation could be that awarded teachers are more nuanced in their view of student creativity.

The central aim of the online questionnaire was to clarify whether the different facets of creativity identified in the interviews would also match within a broader group of teachers. The online questionnaire was provided to all teachers at three universities called 'UAMR' in Germany: Dortmund (N = 2307), Bochum (N = 2973) and Duisburg-Essen (N = 2432). Of a total of 7712 possible recipients, 812 people clicked on the questionnaire (10.5%). A total of 712 opened the first question. A total of 296 people completed the questionnaire from beginning to end. Of the n = 296 teachers, almost 40% worked in *language and cultural studies*. Mathematics/science and law/economics/social sciences each represent about 20%. The other disciplines were less represented (Figure 1).

The distribution between male and female respondents is almost equal: 52.1% and 47.9%, respectively; 70% of the respondents are academic staff, about 20% are professors and more than 10% are lecturers.

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Table 1. The 6-Facet-Model – how teachers express student creativity (data from online questionnaire).

Facets	Teachers' quotes of how they grasp student creativity
F1, Self-reflective learning $n = 297$	Reflective thinking during classes
	Deeper development of a thought
	Students apply theoretical concepts to useful real-life exam-
	ples
	Combining several concepts into a meaningful new arrange-
	ment Making cross-links
F2, Independent learning $n = 365$	Show own initiative, making own decisions
	Own research work regarding BA/MA thesis
	Students use various paths/modes
	Independently conducted projects/assignments, e.g. a case
	study Doing without help from professor
F3, Showing curiosity and motivation $n = 243$	Enthusiasm for the subject/discipline
	Students ask challenging questions
	Lively and critical discussion with fellow students
	Activating other participants
	Willingness to create above average performance
F4, Producing something $n = 278$	Creating websites in a Business English class
	Development of a software architecture for a training project (exercise)
	Instead of a paper, a podcast is created
	Developing brochures, doing more than the given exercise
	Students explaining chemical facts via drawings
F5, Showing multi-perspectives <i>n</i> = 326	Getting out of standard strategies or instruments
	Students look at problems from new and multi-perspectives
	Unconventional thinking
	Students consider issues from a perspective that had not been
	taken before
	Looking beyond the boundaries of a discipline
F6, Reaching for original, entirely new ideas $n = 326$	Students show me (teacher) unknown solution for a specific
	problem
	Extraordinary ideas in well-known issues
	Development of extraordinary empirical methods
	Innovative experimental problem-solving
	Students go ways that differ from the default and not pro- cessed in literature

To what extent do the teachers' open answers match with the results from the interviews?

The data show that all six facets are mentioned and assigned. Only 0.5 of all 1844 listed, open-ended responses by the teachers are not assigned. The distribution of the six facets is fairly even, which is a positive surprise. Every teacher could assign any item more than once. Figure 2 shows teachers assigned their open answers mostly to Facet 2'independent learning' (365). Facet 6 (original, new ideas) and Facet 5 (multi-perspectives) were each given 326 assigned answers. Facet 1 (self-reflective learning) and Facet 4 (producing something) were given almost 300 assigned utterances (297 and 287). Facet 3 (showing curiosity and motivation) is slightly different with around only 250 answers (243).

Depending on the teachers' discipline, the data indicate that the six aspects are valued differently roughly between social sciences and engineering. The 10 interviewed teachers from the field of pedagogy stated that only Facets 1–2 are important for them. This survey confirmed this tendency as teachers from social sciences including law and economy departments value F1 (18%) and F2 (20%) as most important. This is different to engineering teachers, which put a strong emphasis on facets F6 (21% assigned answers), F5 (19%) and F4 (17%), while Facet 1 (13%) and 3 (10%) are less valued. Facet 2 (independent learning) is valued almost equally (ca. 20%).

Table 1 illustrates typical teachers' answers in the online survey and how they assigned their answers to one or more of the six facets.

Discussion and implications

The results provide empirical evidence that there is no single understanding of what creativity is. The data indicate that teachers 'see' the student process of bringing something new into learning in different forms depending on their discipline. We categorised them in a 6-Facet-Model applying a data-driven conceptual framework. It is remarkable that the option 'does not fit' was chosen for only nine answers, which is approximately .5% of all the responses. This indicates that the six facets are able to comprise all teachers' concepts of student creativity in HE. Furthermore, all six facets are about equally represented suggesting that all six facets are equally important. There is no facet that really dominates or that does not matter at all. However, from an individual teacher perspective, the results indicate that teachers in pedagogical departments focus rather on Facets 1–2, while engineering teachers besides Facet 2 focus more on Facets 4–6. Another study is required to explain these coherences. From this result, it can be concluded that a 'course design for creative learning' does not necessarily need to include all of the six facets; rather a focus on two or three facets can be useful depending on discipline and course context. Engineering tries to find a solution to a problem (F4, producing something), while pedagogy tries to find the problem (F1, self-reflective learning).

Teachers from different disciplines concordantly relate creativity to learning. The 6-Facet-Model embraces existing approaches about creativity and learning as pointed in the theoretical sections. For example, Adriansen's (2010) focus on critical thinking matches with Facet 1. Raiker (2010) and Brodin and Frick (2011) match with Facets 1 and 2. Lange (2010), who uses photographs to trigger conversation, fits to Facet 3. But, in terms of May (1994), the model of the six facets of creativity is able to show the bigger picture of creativity in HE rather than some partial aspects. Our findings also point to the discussion that the factors 'novel' and 'value/useful for someone' (Sternberg, 1999) need to be differentiated in every context. Facet 1 is rather related to the 'mini-C' (Beghetto & Kaufman, 2007), creativity that takes place in learning processes. Facet 6 is rather related to the 'Big-C', a creative effort that is a breakthrough; while the other facets are not clearly related to any of those creativity models. Creative thinking can be rather assigned to Facets 1 and 3, whereas creative actions are shown in Facet 4.

This study generated an understanding of how teachers grasp, see, observe and conceptualise student creativity in HE. We made the teacher's view visible. Conducting an empirical study, we looked beyond the term 'novelty' and differentiated it with regard to student learning from the viewpoint of teachers. Our findings stress that creativity is not an objective category, rather a subjective category that a person observes and labels as creative or not creative. What one thinks is creative does not necessarily mean that all other people label or value it as novel – it depends on the observer position. It might be useful to apply an open concept, where the involved stakeholders and informants should be asked what they think about creativity and let the informants tell the story. The six facets can also be used in further studies to look and inform teachers and academic staff developers how to design for creative learning. Such a new course design can be developed, applied and studied.

Taking the total response rate of the online survey into account (n = 296 teachers, 3.8% of N), the results shall not be considered representative. For example, a larger response rate could change the order of the facets. The represented disciplines are unequally represented, that we are careful with statements about disciplines – however, our derived implications are strong tendencies. Nevertheless, our findings have a general value for several reasons. First, we adopted a triangulation approach to establish the validity of the data. Second, the results have been discussed and reflected in several workshops held at European universities since 2010.

The main aim of the larger project was to support creativity in HE that included the teachers' and the students' views in HE but not limited to any specific discipline. For this, we studied teachers' views as the first step. With this knowledge at hand, we began to conduct workshops on how to foster creativity in education. Since 2010, our findings have been discussed with more than 200 university teachers from different disciplines in 14 HE workshops including international teachers and academic staff developers, where the 6-Facets-Model has been used as a central reflection tool for fostering creativity in HE and how to design courses under the idea of creativity. In each workshop, the participating teachers

answered the question, 'What is a creative effort of my students'. Answers had to be written on cards, then the 6-Facets-Model was shown, and the teachers were asked to assign their answers to one of the six facets or to the given option 'Does not fit'. In each workshop, the teachers assigned a maximum of two cards to 'Does not fit', whereas all the other cards could be easily assigned to the six facets. This strengthens our results that the 6-Facets-Model is able to represent almost every aspect of creativity in HE, but having in mind that different teachers focus on different facets, and usually they do not use all of the six facets in one course. In the workshops, we also discovered that teachers have difficulties assigning their concepts of student creativity to only one facet. Sometimes they argue that their cards could be assigned to more than one facet and claim that the facets are not selective and not separated clearly enough. This can be explained by the fact that the six facets had been originally arranged as consecutive steps inspired by pedagogical models from 1 to 6 and were therefore not intended to be selective. For example, Facet 2 'independent learning', cannot be done without Facet 1 'self-reflective learning'. Teachers who focus on Facet 6 told us that their students are not able develop original ideas (F6) without having learned to learn independently (F2).

Further studies are required that investigate the differences of creativity in disciplines and include student views. The 6-Facet-Model provides a solid ground for such studies, e.g. our pilot in Haertel, Terkowsky, and Jahnke (2012).

Note

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No potential conflict of interest was reported by the authors.

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