Creativity at secondary school

While creativity is typically associated with curriculum areas such as the visual and performing arts, it has a place in every school subject. This is true from the earliest years of high school, when students are laying the foundation of knowledge and skills in their subject areas and discovering where their interests lie, to the latter years, when students who develop a range of strategies to transfer, summarise and retrieve information for assessments or exams are more likely to achieve higher grades[1]. We also know that a teacher's use of a variety of pedagogical approaches in the classroom can lead to better outcomes for their students[2]. Teachers who demonstrate their own creativity will motivate students to explore their own creative journey with more confidence.

While creativity has certain attitudes and skills that might be considered generic, there are some clear differences in how creativity manifests in different subjects. Firstly, **creativity is highly dependent upon subject specific knowledge and skills**[3]. The skills of critical thinking in mathematics are contextually, cognitively, and practically different to the skills of critical thinking in English. It is for this reason that, when teaching about or for creativity, teachers need to relate the creative competency being taught directly to the knowledge and skills required in the subject area. Secondly, we know that **there is a strong link between motivation and creativity**, in particular intrinsic motivation, although we also know that people are not motivated to the same level in every part of their lives[4]. The same is true with school subjects. A student might be highly motivated in one subject: they work hard, are willing to take risks and try new things in order to develop their subject competency. However, they might be significantly less motivated in another subject and therefore less likely to be creative.

One key question that teachers ask is what level of creativity can be expected by students at particular ages and stages. The answer is that most teachers probably already know but have never had to explain it formally. A very popular construct is the 4Cs[5]. When the average person talks about creativity, they often talk about what is called **Big-C** and reference Mozart, Einstein and Picasso. Individuals like this are extraordinary. School teachers, or butchers, or professional sports people work at what is called the **Pro-c** level. They have had formal training, applied practice and lots of experience. At the school level, students are working in what researchers of creativity call **mini-c** and **little-c**. Mini-c is the very beginning of the creative process - what we might consider everyday creativity. It is the discovery of something new. For a student it can be making their first sandcastle, for an adult solving a problem around the house when they don't have the right tools. Little-c is more deliberate and planned creativity. Even at the very end of high school, the vast majority of students are at the little-c level of creativity.

Promoting creativity in the classroom: Teaching with, about and for creativity

There are two distinct approaches to creativity in the secondary school classroom. Firstly, there is **teaching *with* creativity**. This refers to the pedagogic approach used by teachers. Modelling creativity is a highly effective way to demonstrate to students that it is possible for them. For example, you might choose to run a lesson only using digital tools, or only analogue tools. You might manipulate the physical environment. One highly effective method is to create a 360-degree classroom in which whiteboards or paper are put on all four walls of the classroom, and students are asked to write one question that they would like the group to explore on each wall. This generates a more diverse group than would be the case with students sitting in their normal pairings at desks. A further positive consequence

of manipulating the physical environment is that it has an impact on the social environment. In the example above, it is quite common for pairings or groups of students not previously observed in that class to emerge. Students working independently at one of the four walls are more likely to engage in discussion, feedback, and informal and formal peer-to-peer student instruction. Students who may not feel comfortable asking a question in front of the whole class may be more willing to ask questions when only one or two classmates are within earshot.

The other approach is **teaching *about* and *for* creativity** in order to build the creative capacities and competencies of students. Creativity is not a separate subject which lies outside of your discipline, and small amounts of explicit instruction in one or two of the components of creativity is the most effective way to introduce creativity into your subject. There are, of course, differences in creativity between subject areas, as creativity is applying knowledge and skills to solve problems in a specific context - being a creative musician is not the same as being a creative mathematician. That said, being open to three or four different ways of practising a musical instrument may encourage a student to find three or four ways of solving a mathematical problem.

Supporting the creative process: Problem solving

The element of creativity with which people are most familiar is the creative process, also known as problem solving. This takes students from a question to idea generation to idea selection and the presentation of proposed solutions. One way of generating ideas is for students to write down everything they know about a particular problem and then start to look for links that might demonstrate causality. This can begin with a series of open-ended questions. This is a very useful method in subjects such as science, where students are looking at reasons for chemical or biological events. When learning about chemical reactions, students might be asked if all substances freeze or boil at the same temperature. In biology, students might be asked how many different types of animal reproduction they are aware of. Exploring the sum knowledge of the group may lead to a more complete picture than students just showing their individual understanding. For example, a Year 8 Geography class exploring urban design in different countries was asked if they had been to any of the countries being discussed. The insights given by the students who had visited cities in a range of countries led to more creative ideas from the group when looking to solve some of the problems of urban environments, such as over-population and waste disposal. Another creative approach is to utilise a range of methods to record ideas as they are generated - post-it notes and butchers' paper may be useful in some circumstances, or digital tools in others.

The next part of the creative process is idea selection. Once again, there are a number of methods to choose from. A quick and simple method is a vote. If using post-it notes, students put the post-it notes into categories and then vote on which of the ideas they believe have the greatest chance of successfully solving the problem. Voting can be done openly or by means of a secret ballot using a digital tool such as Kahoot. Another way to select ideas is for students to demonstrate their idea by the process of prototyping. For instance, in physical education students might be asked to redesign a game by changing a particular rule. Students could demonstrate how this rule could make the game more enjoyable. Prototyping a range of rules over a particular period of time will demonstrate to the students the impact that these changes may make. In subjects such as commerce and business or the design subjects, categorisation is a good way to select the best ideas. For example, ideas could be categorised by the most logical, the most cost-effective or the most original.

Attitudes and attributes

In addition to the process-based skills of idea generation and selection, students also need to develop certain attitudes and attributes regarding creativity. These include things such as intellectual curiosity, tolerance for ambiguity, and the ability to look at things from multiple perspectives, as in the following example. In an English class where most students had English as a second language, the teacher was explaining the use of persuasive text in advertising (subject-based skills and content should always be explicitly taught when introducing a creative competency). In terms of teaching for creativity, two creative competencies were developed. The first was the ability to look at things from a variety of perspectives when solving a problem (which was, in this case, how best to use the persuasive language of advertising to sell a product). The second was intercultural understanding, or how different cultures explain concepts or ideas. The teacher's approach, combining subject-based competency with creative competency, involved looking at how different cars were advertised in the countries from which the students came, and what kind of language was used in each country to sell a particular vehicle. By leveraging their prior knowledge, the students gained a better understanding of persuasive language in English as well as building a deeper cultural understanding among the students in the class.

Integrating a small creative component at the start of a lesson will help students build their creative competencies over time and realise that they are a part of developing knowledge and skills in any subject. Some examples include starting the lesson with a question from the teacher, pre-selecting a student to ask a question, asking students to swap notes from the previous day's class to compare understanding, and running a traffic light exercise, where students who understand a particular concept sit in the 'green zone', those who aren't sure sit in the 'yellow zone' and those who do not understand sit in the 'red zone'. Green-zone students then explain the concept to red-zone students while the yellow-zone students observe. Making students aware that the lesson may start differently each time will lead them to become more cognitively engaged, as they will need to concentrate at a higher level than if they merely sat down and opened their textbooks and laptops. Having an active learning environment from the start of the lesson increases learning productivity and promotes student metacognition about their learning and engagement.

Reflective questions to ask about teaching for, about and with creativity

The examples above should have given you some food for thought. In the same way that open-ended questions may prompt a more diverse range of responses from students, the following open-ended questions may help your reflective practice as a teacher.

- How can you improve the creative social environment of your classroom?

- How might you help your students learn how to offer constructive feedback? Why is this important?

- What are some of the attitudes and attributes that you might look for in your students to help them to be more creative? How can you support students to further develop these attitudes and attributes? (For example, sharing your own love of a particular subject or topic and why it makes you curious may help to spark students' creativity).

- The creative process includes generating ideas, recording ideas and selecting ideas. Can you find a number of techniques for each of these? Where can you find more information about the creative process? Are there more ways to generate ideas than brainstorming with post-it notes?

- What results do want in your classroom? Bearing in mind that, like any learning, building creative capacity takes time, what are some interim outcomes you might look for, such as students being able to justify their thinking or find several ways to solve a problem? What are some ways that you might formatively or summatively assess the elements of creativity in your students?

Teaching with and teaching for creativity is well within the reach of every teacher. However, the process of building your creative competences and that of your students, like the development of any knowledge and skills, needs to be steady and gradual.

References

Collard, P., & Looney, J. (2014). Nurturing creativity in education. European Journal of Education, 49(3), 348-364.

Craft, A. (2001). An analysis of research and literature on creativity in education: Report prepared for the Qualifications and Curriculum Authority.

Runco, M. (2008). Creativity and education. New Horizons in Education, 56(1), 96-104.

Endnotes

1 Costa, A. L., & Kallick, B. (2009). Habits of mind across the curriculum: Practical and creative strategies for teachers. Alexandria, VA: ASCD.

2 Cropley, D. H., & Patson, T. (2019). Supporting creative teaching and learning in the classroom: Myths, models, and measures. In C. Mullen (Ed.), Creativity under duress in education? Resistive theories, practices, and actions (pp. 267-288). London, UK: Springer.

3 Tubb, A. L., Cropley, D. H., Marrone, R. L., Patston, T., & Kaufman, J. C. (2020). The development of mathematical creativity across high school: Increasing, decreasing, or both? Thinking Skills and Creativity, 35.

4 Fischer, C., Malycha, C. P., & Schafmann, E. (2019). The influence of intrinsic motivation and synergistic extrinsic motivators on creativity and innovation. Frontiers in Psychology, 10, 137.

5 Kaufman, J. C., & Beghetto, R. A. (2009). Beyond big and little: The four C model of creativity. Review of General Psychology, 13(1), 1-12.

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