

The Languages of Play

Elizabeth Rushton and Heather King take a cross-linguistic look at notions of 'play' in STEM engagement activities.

Over the past decade, considerable efforts have been directed towards better understanding how to create spaces, including both those in formal education (e.g. schools, universities) and in out-of-school settings (e.g. museums, science centres), in which the widest diversity of children and young people feel that STEM (science, technology, engineering and mathematics) is 'for them' (Archer et al., 2015; Dawson, 2014). Such STEM engagement programmes and activities are frequently described as 'playful' and 'fun' ways to engage with aspects of STEM. In recent years, many such programmes have included elements of *coding* – developing skills linked to computer programming (Duncan, Bell & Tanimoto, 2014) and *making* – informal, creative and collaborative design and building projects in the arts, sciences and engineering (Martin, 2015). Notably, coding now forms part of the English school curriculum, whilst makerspaces have been established in a range of UK-based educational settings, including *The Life Science Centre*, Newcastle; *Fab Lab*, Exeter Library, Exeter; and *The Invention Rooms*, Imperial College, London, UK.

Play has long been recognised as central to the development of children (Piaget, 1945; Vygotsky, 1978) and, although the framing of making and coding activities frequently include the terms 'play' and 'fun', it is not clear how these terms are understood and whether these descriptors accurately illustrate children's experience and learning. We argue that greater clarity in this area is relevant and timely as, despite the growing popularity of these approaches to STEM engagement with young people, parents, schools, policy makers and governments (Martin, Dixon & Betser, 2018), they remain under-researched (Martin, 2015). It is to this gap that the EU-funded 3-year *COMnPLAY Science* research project aims to contribute further understanding, bringing together insights from STEM learning and engagement activities with emphases on coding and making that are framed as 'fun', 'creative' and 'playful', from across Europe. The project began in 2018 and, is a collaboration between researchers and educators based in Austria, Finland, Germany, Greece, Malta, the Netherlands, Norway, Spain, Sweden and, the United Kingdom, including the authors. Due to the pan-European scope of the project, activities take place in a

variety of European languages and settings, and this provides a further opportunity to explore the framing of activities as ‘playful’ and/or ‘fun’. Here, we explore and reflect upon the ways in which these terms are understood by researchers, educators and practitioners in STEM focused activities, delivered in seven European languages.

Cross-linguistic comparisons of understandings of play

In late 2019, during the second year of the *COMnPLAY Science* research project, we gathered contributions in response to the following questions, (1) What do you understand by the word ‘play’ as commonly used in your language? And, (2) How is the term ‘play’ used and understood in STEM focused engagement activities? In phrasing the questions thus, we sought to gather common or everyday interpretations of the term ‘play’, rather than dictionary definitions which, we felt, might not fully capture contemporary usage. Responses were collated from researchers and educators working in the following seven European languages: Dutch, English, Finnish, German, Greek, Norwegian and, Spanish. In Table 1, we present responses to our first question.

Table 1: the common meaning of the word ‘play’ in seven European languages

<i>Language</i> and word for play	Common or everyday understanding of the word play
<i>Dutch</i> Spelen	Engage in an often social activity, that has many degrees of freedom to determine your own path and goal, and to negotiate these with others. The framing of the activity can be diverse, such as exploration, expression, learning, or being creative.
<i>English</i> Play	Engage in activity for enjoyment and recreation rather than a serious or practical purpose.
<i>Finnish</i> Leikkiä	To be at play, which can include imaginative play, and is focused on simple enjoyment.
<i>German</i> Spielen	Active engagement in a playful activity / game. It can be conducted by individuals as well as two or more people, both children and adults.
<i>Greek</i> Παίζω	Engage in something just for enjoyment / pleasure. Comes from the ancient word “παῖς” which means “child”.
<i>Norwegian</i> Lek	Participate in or engage in (be occupied with) an entertaining (organised or spontaneous) activity for pleasure, without any particular practical, useful purpose.
<i>Spanish</i> Jugar	Do something with joy in order to entertain oneself or have fun.

In the general definitions of ‘play’ found in Finnish, Spanish and German, play is described as an activity or a game that entertains or is enjoyable. This element of entertainment is also present in definitions of play in English, Greek and Norwegian.

Here, play is understood as an activity for enjoyment and pleasure and, furthermore, stands in distinct contrast with activities that have a ‘serious’, ‘practical’ or ‘useful’ purpose. The Dutch definition of play is distinct from the other six languages as it includes, ‘freedom’, ‘exploration’, ‘expression’, ‘learning’ and, ‘creativity’.

One of the challenges the project faces with the framings of ‘play’ is that in six of the seven European languages of our partners, play is described solely as entertainment; in English, Greek and Norwegian play is described as *not* having a ‘useful’ or ‘practical’ purpose. Only the Dutch definition includes the idea that learning is part of play and this, along with the features of exploration and creativity, reflects Piagetian and Vygotskian understandings of the role of play in childhood development. Significantly, the broad and perhaps more simplistic understandings of play found in, for example English and Norwegian, could limit the perceived value of play for both general childhood development, but also more specifically STEM engagement activities designed for children and young people.

Representations of play in coding and making

Responses to the second research question were drawn from either (1) interviews with facilitators and programme designers of coding and making activities, or (2) the reflections and perspectives of *COMnPLAY Science* researchers studying coding and making activities. In Table 2 we present a summary of responses.

Table 2: Typical usage of the word ‘play’ in coding and making contexts across Europe

<i>Language of respondent</i>	Understandings of ‘play’ in the context of Coding and Making based STEM activities
<i>Dutch</i>	When you support children in engaging with making activities, it is important to consider the playful and fun properties of the activity to support a positive experience of the children. By embedding playful properties this will contribute to their sense of control and pleasure in the activity. Activities can support the different phases of play, from invitation, exploration and immersion to support the emergence of different play(ful) scenarios to unfold, and, supporting the iterative and trial and error properties embedded in play and making. (<i>COMnPLAY Science</i> researcher, 2019)
<i>English</i>	Play is about making sure that children don’t have constraints, they spend most of their time at home and at school with limits to their playfulness so we want to create an environment that is safe and supported but allows children to connect with their inner playfulness and act out scenarios and role play. (<i>Makerspace</i> programme designer, 2019)
<i>Finnish</i>	Children understand play in these activities as a way to enjoy themselves with their friends. They sometimes use humour in their play to entertain their friends – sometimes this can be seen as superficial engagement with the activities. (<i>COMnPLAY Science</i> researchers, 2018)
<i>German</i>	Playful means discovering something new and creating something yourself in our labs is fun. The most important skills are acquired in a sustainable way. (<i>Coding</i> programme designer, 2019)

<i>Greek</i>	We believe in learning through play, experimentation and failure as it is the path to success. F.A.I.L. First Attempt In Learning. That's why we take play and fun very seriously. Because learning requires dedication. (Makerspace programme designer, 2019)
<i>Norwegian</i>	Play is more like kindergarten or leisure time activities, a hobby. I would not use play to describe learning in makerspaces, but it is common to see 'playing around' and having fun experiences in makerspaces. (Makerspace facilitator, 2019)
<i>Spanish</i>	For children, play is not only a positive memory of childhood, but also an attractive activity of maintaining their motor and intellectual faculties and, above all, a means of fun and relationship between them. (COMnPLAY Science researcher, 2019)

The representations of play provided by coding and making programme designers, facilitators or researchers emphasise elements of freedom (English), exploration and experimentation (German, Dutch, Greek) and hands-on learning (Spain). All respondents suggest that play is often an activity that is social and collaborative. Interestingly, the makerspace facilitator from Norway did not consider the term 'play' appropriate for their setting, equating play as something that was more relevant with younger children. Indeed, fun and amusement would appear to have a more peripheral place in many accounts of play. For example, in the Finnish context, researchers reported that children who participated in coding activities used 'play' and 'fun' to describe the behaviour of their peers who they perceived as being less productively engaged with the activities. In contrast, other definitions sought to qualify their use of 'play', for example 'we take play and fun very seriously' (Greek) or used 'fun' to describe playful activities and experiences that were enjoyable (Dutch, German Spanish). The representations of play shared here are arguably more nuanced, and perhaps more critical than the everyday understandings of play described in Table 1. We suggest that this reveals a disconnect in the way these terms are used. Further, we argue that those who work in making and coding spaces have developed a shared and distinct understanding of play as it is enacted in these contexts. This could be described as a 'social representation' of play. Social representation is a collective phenomenon, co-constructed by individuals (e.g. facilitators of maker spaces) in their everyday talk and actions, which allows the group to develop its own specific interpretation of the constructs, and to name different aspects of their world (Wagner et al. 1999). Social representations, whilst not always consensual, provide a common code of communication even where practices can be fragmented and contradictory (Martinez-Sierra et al., 2016).

The social representation of play found in STEM engagement activities focused on coding and making is one that values play as a framing which incorporates the

freedom to actively create, explore, experiment and discover science in ways that are pleasurable and enjoyable. Here, play and enjoyment is linked to positive indicators of engagement rather than denoting activity that is superficial, silly and purposeless. By highlighting the social representations of play from STEM engagement contexts we suggest that the application of play has a pedagogic value in encouraging children's creativity and experimentation. Furthermore, this small study has demonstrated the importance of practitioners reflecting upon their use of words, and their meanings, in their own cultural contexts. As we have learnt from our involvement in the wider pan-European project, which has English as a common language, there is the potential for central terms such as 'play' to lack precision and nuance of varied cultural understandings. For example, the lack of specificity around the term 'play' may have compromised understandings about the value of play as an effective vehicle for supporting children's engagement in coding and making either through being overlooked or by being misunderstood as something that is superficial or trivial. It is perhaps notable that many languages do not have different words for different forms of play thus play is interpreted ambiguously. Some researchers, however, have sought to qualify and further define their use of the term 'play' by using additional determiners. For example, Angela Calabrese Barton and colleagues (2017 p.29) use the term 'purposeful playfulness' to describe young people's engagement in making activities where they have the opportunity to be both playful and deepen their understanding of STEM knowledge and practice. However, we also note that using additional determiners can be seen to elevate some forms of play over others, potentially valuing activities which have a more clearly defined learning outcome than those which are grounded in free-choice and imagination (Rushton & King, 2020).

In our ongoing work we are considering how play can be best understood as a pedagogical approach in on-off facilitated STEM activities. In doing so, we are acutely aware of the need for clarity and care when using and defining 'play' to ensure that both our *COM n PLAY Science* project colleagues as well as, the wider community of coding and making practitioners, understand our proposals and can thus effectively translate the findings (literally and figuratively) to their own languages and cultures.

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