



TEACHER CREATIVITY MANUAL

A note to the reader...

This manual is designed as a foundational look at creativity and is especially useful for teachers who do not feel they have an understanding or high level of confidence in demonstrating or teaching creativity skills. If this is you, please be conscious that there may be children in your classes that have skills and attitudes in creativity, even at a young age, that already exceed many of the skills outlined in this manual. For that reason, you need to use some discretion in how you teach and use the suggestions in this book. Being too didactic with these highly creative children may actually hold them back from enhancing their skills.

On the other hand if you are a highly creative teacher, it is very easy to assume that all people have had access to creative parents and other mentors in the past but this is often not the case and some children can have very poor creativity skills and attitudes. In many cases, you may need to start right at the beginning by explaining what creativity is and why it is valuable, as creativity in certain families and cultures can be actively avoided as a desirable attribute. As always we need to take a child by child approach to assist those in our care to maximise their potential.

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01. WHY IS CREATIVITY SO IMPORTANT?

When education systems for all children were being established, society was more “top down”, where leadership and thinking outside the square were not desirable attributes.

Things have changed dramatically! With the **rise of the “professional”**, employees are expected to self manage and be creative problem solvers that feed ideas up the chain. Furthermore we are seeing the emergence of the “gig economy”, where many people are choosing not to follow any set career path, but organically taking on more project-based work around their interests. These morph and develop over time, requiring an extremely nimble and flexible mindset.

Finally, the biggest change on the horizon, which will affect us much sooner than we think, is the **technological revolution**. We already rely heavily on our devices for daily tasks, and although those tasks are still fairly simple now, that is all going to change. Human progress is linear but **technology changes exponentially**. Before long, many jobs done today by humans will be done all or partially by **robots**. What does that mean for education? It means we need to focus our skills on those things that robots will find difficult or impossible. Those things that make us truly human-like **creativity, innovation, social skills**, such as **collaboration**, and the **arts**. Because there is a **20 year** or more **lag** between education research and change, and that change reaching society, we **must act now**. We need **revolutionary change**.

It is easy to say these things, but creating change in any large system is exceptionally difficult. The solution is not to rewrite the script, but to help teachers be more **creative within the system**, so we don't waste another generation being more behind than we already are. Children should be practicing the skills they need to thrive. If the system is unable, or too slow to change, teachers need to **change the system from within**.

02. A CREATIVITY REVOLUTION HAS BEGUN

While teachers are crucial in making immediate change, they are not alone. The good news is that education systems all over the world have finally begun the process of **adding creative competencies into the curriculum** which is a huge step in the right direction.

This new set of skills has many names, such as “**soft skills**” or **21st century competencies**, and usually includes things such as **collaboration, critical thinking, creative thinking, creativity, problem solving** etc.

Unfortunately, as is true in many industries, buzz words often get mentioned and put into documents without clear and explicit definitions. There seems to be some sort of implicit expectation that teachers, (and everyone else), will know what these words mean and that teachers - without tools or training - should simply implement creativity into the classroom.

So, in an effort to dispel the confusion, let's start with some clarification.



03. WHY DOES ALL OF THIS MATTER?

A recent study, which followed a group of 500 students for four years found that **openness to new experience, divergent thinking, intellectual risk taking, and mathematical creativity**, when combined, was a **better predictor of performance in year 12 scores** than conscientiousness.

In other words, students who had **specific attitudes, processes and skills of creativity** did better than students who **just worked hard**. This misunderstanding has driven both teachers and parents to drill their children in often mundane and unhelpful tasks which is often making their children unhappy and may be causing unnecessary mental health issues. Perhaps of more importance is that we already have the knowledge that all of these attitudes and processes can be taught and developed in the classroom from the early years of school.

These qualities not only predict academic success, they **predict life success**. Employers are crying out for employees with these creative attitudes and skills. It is great news for parents, teachers and students that these skills have tangible value beyond schooling.



04. WHAT IS CREATIVITY?

The most commonly accepted definition of creativity so far as the scientists are concerned is as follows.

‘Creativity is the interaction among **aptitude, process, and environment** by which an individual or group produces a **perceptible product** that is both **novel and useful** as defined within a social context.’

– (Plucker, Beghetto & Dow, 2004)

Contrary to what many assume, understanding and learning creativity is **not magic**, but has been a **science since the 1950s**. Sadly, like many sciences, it can take over a generation for findings proven to be highly effective, to filter through to the people who would benefit from the change that the research has shown. We know from recent research that although teachers have a conceptual understanding of creativity, and know that it is important, they often **lack the training and support** to enable them to include it in their everyday teaching programmes, reports and assessments. In this document we will use the terms which have an agreed consensual definition within the science of creativity, to form an **evidence-led strategy for the classroom**. People who study creativity know what it is, how to teach it, and how to measure and assess it in schools. It is presented here for you to use in your classes and with your Nüdel Kart or Nüdel Rover, (Nüdel Resources).





Key things to know

Before we dive into the process of implementing creativity in your classroom it is important that we present some key facts.

1. **Everyone** has the capacity to be creative in some part of their life, whether in school, work, home or hobbies. We might be more creative in some things than others. This is partially a result of environment, opportunity, or interest, as well as a certain level of knowledge and skills, or natural abilities.
2. **Creativity is good for you.** There is plenty of evidence that shows when people are being creative, they have a heightened sense of well-being. Recent evidence shows that elements of creativity can also positively influence academic outcomes¹. Those with the creativity skills such as collaboration, critical thinking, and divergent thinking are likely to earn more, be healthier, happier and lead more successful lives².
3. Creativity depends on the **knowledge and experience** you have in any activity. It is harder to be creative with little knowledge and experience in the area in which you are being creative. Knowledge and experience give you more and better-quality ingredients with which to be creative, and to develop higher quality ideas and solutions.
4. Something is considered creative if it is **new, relevant and useful** to the individual or group. Children will find things more creative as they discover them for the first time.
5. **Teachers have the power** to influence not only the creativity skills of their students, but also their own personal creativity and creative teaching skills.
6. **Personality matters.** If we want children to operate creatively, it is imperative that teachers do 2 things:
 - a. Demonstrate the below creative attributes and attitudes in their own teaching and,
 - b. That their teaching practice elicits the below responses from their students by the questions teachers ask and the activities they set.

¹ Kaufman et al., 2021; Toivainen et al., 2021

² Toivainen, T., Madrid-Valero, J.J., Chapman, R., McMillan, A., Oliver, B.R. and Kovas, Y. (2021), Creative expressiveness in childhood writing predicts educational achievement beyond motivation and intelligence: A longitudinal, genetically informed study. *Br J Educ Psychol* e12423. <https://doi.org/10.1111/bjep.12423> Kaufman, J.C., Kapoor, H., Patston, T., and Cropley, D. (2021). Explaining Standardized Educational Test Scores: The Role of Creativity Above and Beyond GPA and Personality Psychology of Aesthetics, Creativity, and the Arts (In press).

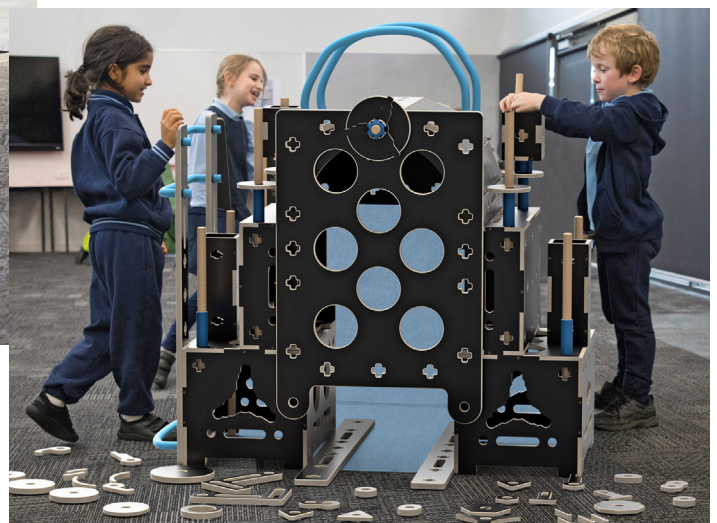
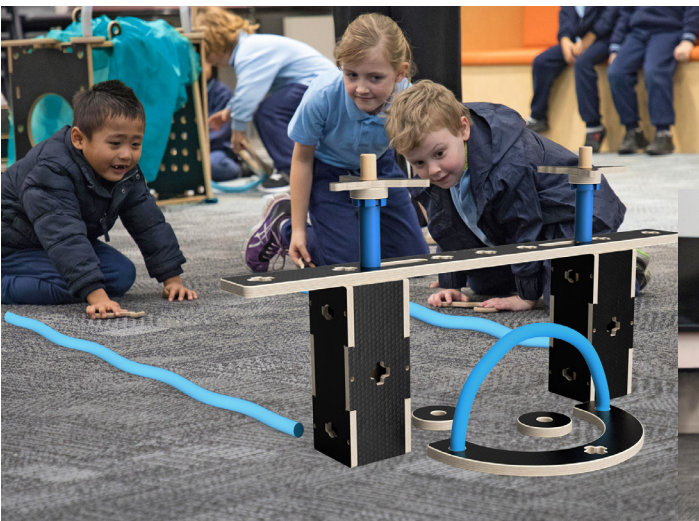
05. CREATIVITY IS A WELL-DEFINED SYSTEM

We mentioned earlier that many people talk about “21st Century Skills”, “soft skills”, “critical thinking”, “creative thinking”, “design thinking”, and a range of other terms. **It is important to note that we are including all of these as a part of the system which is creativity.**

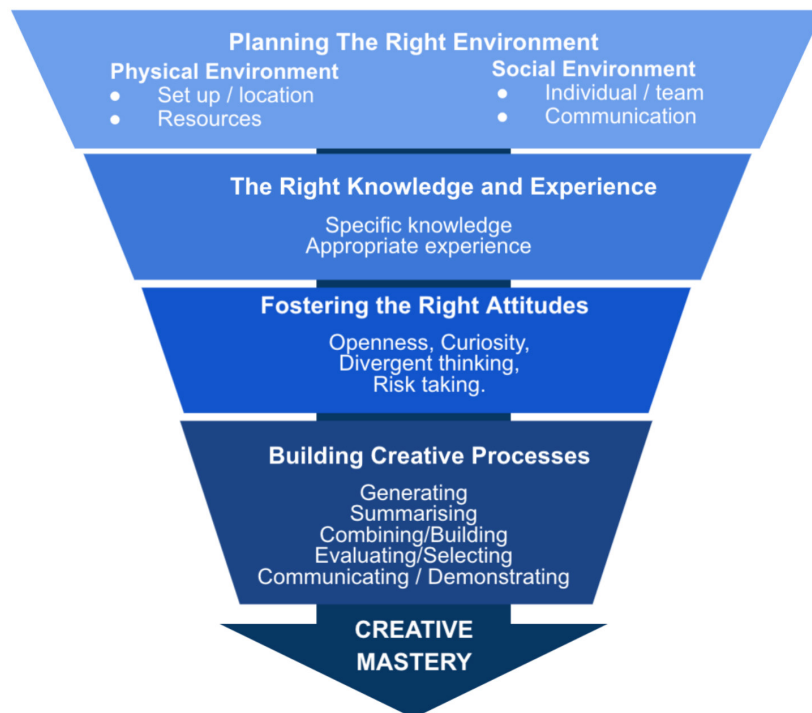
Creativity is not just a type of thinking skill. Of course, being creative involves certain ways of thinking, but there is more to making creativity thrive than just that. Creativity has four evidence-based parts that work together as a system. Each of the four parts influence the other parts to help or hinder creativity.

The elements which make up the system of creativity are:

- / The **environment**, both physical and social
- / The appropriate **knowledge and experience** to apply to the task
- / The **attitudes and attributes** needed to be creative
- / The **creative problem-solving process**, which can be demonstrated in an outcome.



06. 12 STEPS TO BECOMING A CREATIVITY NINJA



The steps of the creative process are easy to understand and teach, allowing anyone to follow the steps and engage.

All of the **elements** of this system need to **work together** in order for creativity to thrive. In the same way that baking a cake requires the right recipe, an oven at the right temperature and the correct method, if you don't have the right **environment**, the right **attitudes**, and the right **processes**, creativity will not thrive in your classroom.

It is possible to work on each of the elements of creativity separately with students. Some students, (particularly those who feel less naturally creative), may appreciate this process broken down into clear stages that they can work on. These students need a road map to know where they are going. Other students may prefer to learn through open-ended Nüdel sessions, and then after the session talk through their process and identify where they struggled or may need to improve. The best way for students to learn is to **learn small pieces of information at a time and see how they relate to other pieces**. We do not expect students to develop their creativity overnight. Building creative competencies takes time.

Please take your time to read the next section and reflect upon which elements you are familiar with, which ones you have already tried in your classroom, and which ones you might need to practice more in your teaching. Once you are familiar with the different factors to develop creativity, we have included an easy assessment at the end of this document for you to start understanding your own and your students' strengths and weaknesses. You can then map out a path to cementing strengths and practising those skills that need more work.

07. THE ENVIRONMENT YOU CREATE

Creating The Right Physical Environment

All teaching happens in a place and a space. The environment you create greatly influences student creativity outcomes. Any environment in which we work or learn has two parts; the physical and the social. The physical environment includes not only things such as chairs and tables or whiteboards, but elements such as writing tools, digital tools, and other resources, also called affordances. We know that a rich physical environment will stimulate creativity and a Nüdel resource was designed from the ground up to create just the right type of physical environment.



Teacher tip - Teachers are quite used to manipulating the physical environment depending upon educational needs. Simple changes such as moving around the chairs and tables, or taking part of a lesson outside, can dramatically impact how students respond creatively. Giving students a variety of materials to use when solving a problem can also stimulate creative thinking.



Use your Nüdel - How could the Nüdel resources change the physical learning environment for students? What are the benefits of such a physical environment to the students as opposed to other traditional learning techniques like textbooks or presentations? How could you translate some of those elements into your normal classroom practice?

Creating The Right Social Environment

In terms of the social environment there are also two key elements at play:

- / Individual / Group work
- / Communication skills (in particular: psychological safety, collaboration; and negotiation).





Individual / Group Work

Creativity can happen individually, in pairs, in small groups, or in large groups. Solo work and group work require slightly **different approaches and attitudes**. Solo creativity means being responsible for all of the creative processes. Group creativity adds the communication and negotiation skills needed for creativity to be effective. Think carefully when planning lessons as to which is most appropriate for your students. It may be better to work on individual parts of the creative process in more depth if working individually. When working in groups, students can assess their natural role in a group setting and work on the attitudes explained below, which they may struggle with in a group setting. For a more structured activity, students can be given specific roles in their group that give them the ability to play to their group strengths, and other activities to practice lagging skills.

Communication Skills

Psychological safety

It's essential that students feel a sense of psychological safety when being creative. This means that as they explore new ideas and new processes, students need a **safe space** free from humiliation or teasing etc, and must be **comfortable** with the **process of failure**, and expect that it will occur many times before success. Students who feel psychologically safe will come up with **more ideas**, develop more **resilience**, be more **confident**, interact more positively with their classmates, and have a greater sense of **well-being**. An important tool for teachers when trying to build psychological safety is to demonstrate **active listening**, and to model **supportive feedback**. These behaviours can then be taught to the students.



Teacher Tip - Observation - When students first start using Nüdel resources, see if they feel confident and comfortable sharing their ideas with you or their classmates. Some students might be afraid of negative feedback or criticism and this behaviour in a group cannot be tolerated if creativity is to thrive.



Use your Nüdel - Facilitation - When students start using Nüdel resources, offer supportive feedback. "That's interesting", "That's a good idea" etc. When they have had some experience, start using open-ended questions to help them explore ideas further. "I really like that idea, how could you use the piece differently?" "That looks good. How could you add some more pieces to make it bigger?"



Collaboration

Collaboration refers to the attitudes and behaviours needed for a coordinated group to effectively collaborate from both a practical and a social perspective. An effective collaborator is one who shows **empathy** for the **perspective, attitudes and competencies** of others throughout the process.



Teacher tip - Students learn early in their development in play and games about collaboration. Talk about this before the students start working. How do they know if a student is a good playmate or not? Can they give examples? How can they be a good teammate when using Nüdel resources?



Use your Nüdel - After students have had some free play time, allocate roles for collaboration. One student can monitor that everyone has a turn to speak and give their idea or ideas. One student can monitor how many different pieces have been used. As they become more experienced, one student can learn to ask open-ended questions - "Could we use different pieces?" "Could we use the pieces in different ways?"



Teacher Tip - Observation - When students first use Nüdel resources, some will work in pairs or groups. Observe if they are working as a team, all contributing equally and listening to each other, or if one or two students are running the show, with others doing what they are told. If so, stop the session and ask the students for their observations. "Does everyone feel they have had a chance to add a piece or an idea?", "How can we make sure everyone has a turn that wants one?"



Use your Nüdel - Facilitation - Ask a group of students, (4 or 5 is best), to make an object or objects from their Nüdel resource which tells a story. (You may or may not give the theme or title). Provide two guidelines - Every student must contribute at least one idea; If someone has an idea, everyone must listen without interrupting and be able to repeat that idea before adding any of their thoughts.



Negotiation

The skill of negotiation is considered very important in the adult world and a critical and difficult skill needing practice in childhood. It involves **communicating** with others so that everyone feels that their voice has been heard **respectfully**, but also having the attitude to combine and filter the different ideas down to a **solution** that works for the problem being solved, as opposed to simply trying to get your idea on top. It's important to note here that negotiation is not simply compromise. Negotiation is discussion to come to agreement. Two group members may have different ideas and the task is not simply to merge these together but to discuss the ideas and come up with a shared agreement. That might be one of the original ideas, a merge of the ideas, or something completely new that has been generated from the negotiation.

Negotiation is often demonstrated by children who are playing with limited resources and Nüdel resources have been designed to create this type of situation as parts become scarce towards the end of a session. Building the **social confidence to negotiate** is an important skill for students to develop as it is an essential component of collaboration.



Teacher tip - Students develop the skills of negotiation implicitly through play in how they share turns or toys. Ask students for examples "How do you ask someone if you can have a turn?" "What can you do or say if they say no?"



Use your Nüdel - After free play, allocate the students a number and get them to take turns in giving ideas, or putting pieces together. If they would like to make a change or suggest an alternative, come up with a model question they can use to get permission. "Please, may I?" "Would it be okay if?"



Teacher Tip - Observation - Are students making suggestions and discussing the best course of action, or just trying to use their own ideas.?



Use your Nüdel - Facilitation - Try an activity where students cannot use the words "no" or "I don't like that", they can only say "what if we?" In order for the least confident students to participate, the teacher can ask each student in turn if they would like to change an element or elements to improve or clarify the story.

After a free and open Nüdel session, ask the individuals of the group to discuss a situation where they wanted something but others in the group had a differing opinion, and whether they were able to negotiate a solution or not, and what strategies they could employ next time.

08. KNOWLEDGE AND EXPERIENCE

Creative solutions to specific problems do not magically appear. It is true that inexperience in an area can prompt new and novel answers on why things are the way they are, but **a wide range of knowledge and experience is crucial** in developing **good quality** ideas, and merging and refining ideas to find the best solutions. To build knowledge and experience, the child needs access to a wide range of activities and experiences and needs time and space to explore them. Teachers and parents need to demonstrate an openness to new pieces of knowledge and experience for their own sake and encourage this in their children.”



Teacher tip - If students are building an object, ask them to describe some features or elements the object needs. If students are building a story, ask them to describe the characters in the story - Who are they? What do they do or want?

We suggest regular open ended time free from agendas or prescribed agendas. This will allow children to play and explore with the Nüdel Kart or Nüdel Rover and other items of interest to build a large domain of experience with which to use to solve problems.



Use your Nüdel - After the session ask students if all of the elements had been included to make the object or story clear. Do students from other groups have any knowledge of the object or story which might improve the final design?



09. ATTITUDES

All students have attitudes towards their learning. As they grow older, certain attitudes can become fixed beliefs, either positive or negative. We know from recent research that attitudes and attributes regarding creativity can have a significant impact upon both academic achievement and success in life.³ As in the above example, having little interest or motivation in maths will not lead to creative problem solving in maths.

The right attitudes are important and this next section will tell us what the right attitudes are and how to nurture those attitudes using Nüdel resources. Once students understand these attitudes they can begin to use them in other settings

The 4 Creative ATTITUDES

1. **Openness** is strongly related to curiosity, and a key indicator of academic and life success. Openness is a **willingness** to explore and try new things. Students who are open, notice and appreciate new, complex, and unusual information in a variety of everyday experiences, and are more likely to generate new and useful ideas. They are more comfortable with divergent thinking than those who have a low level of openness. Those with high levels of openness have been shown to release higher levels of dopamine when engaged in divergent thinking. Those with high levels of openness to new experiences are also more willing to take risks when exploring problems. In terms of teaching, teachers can show students that there is more than one way to learn a particular concept, idea, or way to solve a problem. Frequent experience to openness, and encouragement of its benefits, can build this personality characteristic in children.



Teacher Tip - Observation - Students who are more open will select from a wide range of Nüdel pieces and demonstrate high levels of imagination in how the pieces are used.



Use your Nüdel - Facilitation - If a student is only using a small number of pieces or only very specific pieces, use open-ended questions to encourage openness. "I see you have used five different pieces, can you show me another two that might interest you?" Or, "I'd like to try an experiment. I can see how you built a truck out of those pieces. How might you improve it by using these extra pieces? Or, "Could you build another truck but start with this piece next time?"

³ Kaufman, J.C., Kapoor, H., Patston, T., and Cropley, D. (2021). Explaining Standardized Educational Test Scores: The Role of Creativity Above and Beyond GPA and Personality Psychology of Aesthetics, Creativity, and the Arts (In press).



2. **Curiosity** is part of every child's life, and there is a certain beauty in watching a child become deeply curious about something. Curiosity is the **desire** to look at new things or experiences. Highly creative people often have what is called "ubiquitous curiosity" - they are just generally more curious about everything. To encourage your students to be curious, share with them the things that you as an adult are curious about. It is also important that students share their curiosity with others. It is fair to say that none of us really know what we're curious about until we have a look, which is how curiosity links to openness. Once people become connected to an idea, a topic, or a hobby, by being open they begin to develop a sense of curiosity to learn more.



Teacher Tip - Observation - Students who are curious will look at pieces from different angles to see how they look and also how they might interact with other pieces.



Use your Nüdel - Facilitation - Open-ended questioning is a good way to stimulate curiosity in students - "I wonder why?" and "What if?".

You could have regular "what am i curious about" sessions where children share with a small group or the whole class, something they are curious about. It can be a 10 second question they are considering or a detailed exploration of a topic.

3. **Divergent Thinking** is being able to come up with a variety of possible ways to solve a problem, and is a key predictor of creativity, academic achievement and life success in children and adults. Once again, divergent thinking is a normal part of play for children, but they are often explicitly or implicitly discouraged in so-called "academic" subjects in the classroom. The reality is that if a student knows two, three or more ways to solve a maths question, they are more likely to be confident in maths and achieve better results. The Nüdel resources are specifically designed to support children to solve the same problems in many different ways using different materials. We would encourage all teachers to show multiple ways of arriving at a solution in any subject. Once students have choices, they will begin to develop agency. Divergent thinking is a very important skill when trying to solve unfamiliar problems.



Teacher Tip - Observation - Students show divergent thinking in three ways; how many uses they can find for a piece or make up a story; how many different types of use they can find for a given number of pieces and; how original and different their ideas are from each other.



Use your Nüdel - Facilitation - When you observe what a student or a group has done, ask them to show you how it might look if they changed the number, type or order of assembly of the pieces. Encourage them to look at each other's work and observe the differences and use these ideas to improve their own ideas.



4. Intellectual Risk-Taking means sharing ideas with peers and asking questions of the teacher, even at the risk of being incorrect, making mistakes, or looking or feeling foolish. Students need a certain level of confidence in order to take intellectual risks. The ability to take risks may be as a result of 2 things: Having confidence in their knowledge of the specific subject area and; Social confidence which provides a sense of psychological safety. The student knows they will not be derided by their classmates or their teacher when offering an “out there” idea.

As you can imagine the social environment of a class is strongly correlated with intellectual risk-taking. Students who are uncertain or risk averse may struggle to generate original ideas. By encouraging an environment of support to take risks and helping students build from whatever their baseline level of risk taking is, teachers can build students’ capacity and confidence as risk takers.



Teacher Tip - Observation - Students who show intellectual risk-taking are not shy about experimenting with a range of ideas and will share their failures with peers or teachers.



Use your Nüdel - Facilitation - Ask your students what it might look like if they took a risk - more pieces, less pieces (how few pieces can you use to tell a story?), different pieces. Encourage them to explain what they think is a risk. Ask students to share the craziest thing, machine or invention they would like to try with the Nüdel Kart.

In practical terms we understand that many students are also introverted. Teachers having a one-on-one conversation can often be a way to encourage them to take risks.

10. THE 4 STEP CREATIVE PROCESS

Just like you need a step-by-step recipe to bake a cake, you also need a step-by-step process to solve problems. Some students have grown up in families and contexts where this is a natural part of their lives, but many have not. The key challenge for teachers is to get students to appreciate that each step in the problem-solving process is important, in order to be truly creative.



1. Generating Ideas

There are two ways in which students generate ideas. The first, which is a normal part of play for young children, involves only coming up with ideas which the students have based upon their pre-existing knowledge and skills. This is called **spontaneous creativity** and is the type you will regularly see when children use Nüdel resources. The key here is getting students to generate as many ideas as they can within a set amount of time. This is called divergent thinking. The second is really a new phase, where students may do some research to develop their knowledge, which then provides them with some new ideas. As students become more experienced, they can bring in ideas from a range of areas, including parents/ carers. Their idea generation skills build over time.



Teacher Tip - Remembering and Recording ideas - When students start to collaborate they need a way to remember their ideas as they progress. Students can take a photo of an idea, draw an idea, explain it to the teacher, or as they become more literate, write down what the idea is. Seeing how ideas develop over time is very positive for boosting students' creative confidence.



Use your Nüdel - If students have enough pieces, they can keep prototypes or take photos as evidence of their work. If not taking physical or digital evidence of the ideas as they are generated, introduce a "Stop and Look" time out. This gives students time to look at and reflect on their progress, and is a good time for open ended questions; "Can you show me who has contributed ideas in the last ten minutes?" or "How has the group improved this model in the last ten minutes?"



Teacher Tip - Observation - When you observe students using Nüdel resources, see how many students select one idea and then stick to it for the entire Nüdel session. Observe how many students are still trying new things at the end of the session.



Use your Nüdel - Facilitation - Encourage students to do an idea sprint - how many different uses for a piece or set of pieces can they find in one minute?



2. Summarising Ideas

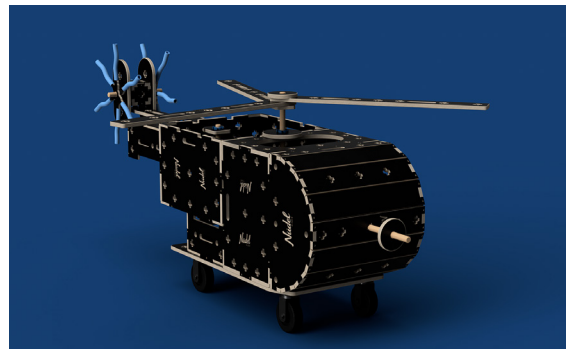
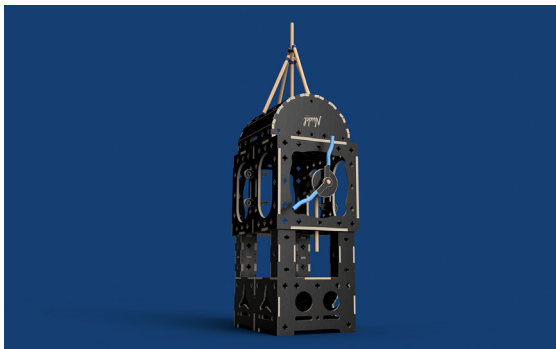
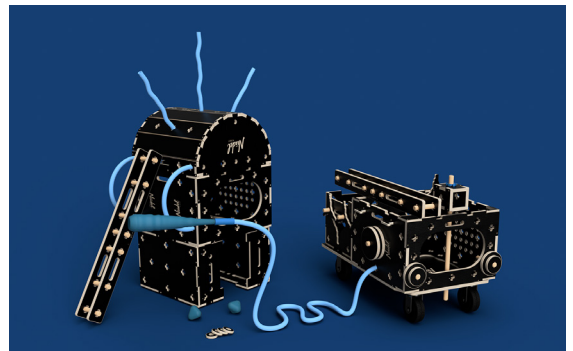
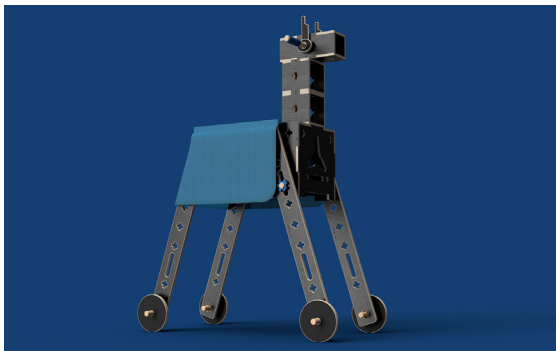
This is a very important part of any activity, and one which is often skipped. Learning to refine, clarify, categorise and merge similar concepts, is an important part of the creativity process as students begin to see relationships between different things. We encourage you to support the students to take a look at all of the ideas that they have come up with and summarise them into different categories.

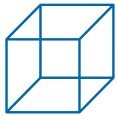


Teacher Tip - Observation - When you observe students using Nüdel resources, do students summarise, merge and categorise their ideas, or do they just move from one idea to the next without clarification?



Use your Nüdel - Facilitation - Suggest the students use post-it notes as colour coding for different types of ideas. They can then group their ideas by colour. Ask students how many different categories of ideas they have generated and how they have improved each of their ideas in those categories?





3. Building ideas/Prototyping

A key component of creativity in building ideas is the **process of iteration**, also called drafting or **prototyping**. The ability to use **critical thinking** to improve from one prototype to the next is essential, from painting, to essay and report writing. Without this, ideas are just ideas. It is this stage that takes a simple idea to something that holistically solves a problem.



Teacher Tip - Observation - Do your students build or develop ideas/stories during the NK session? Do they build partial or complete prototypes? (On some occasions, you might want to have a complete prototype, in other sessions, you might only want to see the development of one or two elements.)

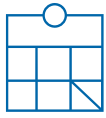


Use your Nüdel - Facilitation - Building ideas can be done verbally. You can ask open-ended questions like "What do you like about what you have so far?" "Please tell me how this version might be improved".

In a practical way, you can set the same task over multiple sessions but with the aim that the students refine and improve their concept each session.

Ask the students to keep a record of their prototypes (see Remembering & Recording Ideas). Ask students to justify their thinking for their final choice. As they become more skilled you can introduce different rubrics. They can be self-measurement, peer observation, or teacher feedback and evaluation (see examples at the end of the chapter).





4. Evaluating, Selecting and Communicating Ideas

Students need to understand why they have selected a particular idea and they need to use **critical thinking** to see which ideas are possible. Sometimes you can have a discussion, sometimes it is worth having a simple rubric for guidance, (as proposed at the end of this chapter as an observation or self-report). Students then use **convergent thinking** to select the final idea which is then implemented. They then need to communicate that idea to others.



Teacher Tip - Observation - When you observe students using Nüdel resources, do students justify their thinking to each other? Why did they choose a particular idea or ideas at the end of the session? Was there any discussion? Are they happy with the end result and did it solve the challenge they set out to work on?



Use your Nüdel - Facilitation - Once again, using open-ended questions is the key. Can you explain how you came to choose that idea? How would you explain your final idea to the rest of the class? Would you use words, pictures, or a practical demonstration? What questions do you think you might be asked about your final idea?





A final note...

Children are at their happiest and most creative when deeply engaged in play. We hope this chapter has demonstrated how important it is for teachers to capture student creativity in play, and think about how this creativity can build over time. Attitudes such as openness and curiosity, if nurtured in children, can become attitudes for a rich, fulfilling and successful life. Collaboration and divergent thinking are among the most valuable skills needed in the 21st century. You as teachers can nourish and nurture these skills in both play and curriculum based learning.

Imagine a world where all schools build creative competencies from early childhood to the end of schooling and beyond. The power to do this lies in the minds and hearts of our children, and in the heads and hands of our teachers. What a wonderful world it would be...

11. TEACHER SELF-ASSESSMENT REPORT CARD

Now you have finished reading this information, please put a tick in the box which gives you a sense of where you are up to now regarding your understanding and application of the ingredients of creativity. As you try more things over time, see if you can improve your report card.

CREATIVITY FACTORS	Understood the Factor.		Have observed the factor in children.		Have taught about the factor to children.		Wanting to understand it and how to teach it further.	
	Yes	No	Yes	No	Yes	No	Yes	No
Physical								
Inside/ Outside?								
Resources ie NK								
Social environment								
Psychological safety								
Collaboration								
Negotiation								
Attitudes								
Openness								
Curiosity								
Divergent Thinking								
Intellectual Risk-Taking								
Processes								
Generating Ideas								
Summarising Ideas								
Building / Prototyping								
Evaluating & Selecting ideas								

TEACHER SELF-ASSESSMENT REPORT CARD

CREATIVITY FACTORS	Understand the Factor.		Have observed the factor in children.		Have taught about the factor to children.		Wanting to understand it and how to teach it further.	
	Yes	No	Yes	No	Yes	No	Yes	No
Physical environment								
Inside/Outside?								
Resources ie NK								
Social environment								
Psychological safety								
Collaboration								
Negotiation								
Attitudes								
Openness								
Curiosity								
Divergent Thinking								
Intellectual Risk-Taking								
Processes								
Generating Ideas								
Summarising Ideas								
Building ideas/Prototyping								
Evaluating and Selecting ideas								

12. STUDENT OBSERVATION CHECKLIST

What qualities are the students demonstrating while they are playing with the Nüdel resources?

DURING TASK MEASURES	Student is at a high level They clearly demonstrate this competence throughout the session	Student is at a medium level They show some evidence of this competence throughout the session	Student does not show these qualities They show no evidence of this competence throughout the session
Skills and Experience - eg Gross Motor, fine motor with NK. Subject knowledge if related to subject or life experience.			
Overall Creativity			
Attitudes			
Openness			
Curiosity			
Intellectual Risk Taking			
Task Engagement			
Collaboration			
Negotiation			
Process - Problem Solving	More than 10	Between 5 and 10	Less than 5
Idea Generation – How many ideas?			
Summarising Ideas/ Categorising – How many different types of ideas?			
Building ideas/Prototyping/ Iteration			
Selecting and Evaluating Ideas – How many original ideas?			

STUDENT OBSERVATION CHECKLIST CARD

DURING TASK MEASURES	Student is at a high level They clearly demonstrate this competence throughout the session	Student is at a medium level They show some evidence of this competence throughout the session	Student does not show these qualities They show no evidence of this competence throughout the session
Skills and Experience - eg Gross Motor, fine motor- with NK. Subject knowledge if related to subject or life experience.			
Overall Creativity			
Attitudes			
Openness			
Curiosity			
Intellectual Risk Taking			
Task Engagement			
Collaboration			
Negotiation			
Process - Problem Solving	More than 10	Between 5 and 10	Less than 5
Idea Generation – How many ideas?			
Summarising Ideas/Categorising – How many different types of ideas?			
Building ideas/Prototyping/Iteration			
Selecting and Evaluating Ideas – How many original ideas?			

13. STUDENT SELF-REPORT CARD

It is important for you to learn how to think about your learning experiences. This is a basic self report about your creativity work. You can also get your friends to assess your creativity skills too to get a different perspective.

DURING TASK MEASURES	All the time	Some of the time	None of the time
Environment			
I had all the resources I needed to show my ideas			
I felt safe sharing my ideas with my classmates			
I felt safe sharing my ideas with my teacher			
I used specific knowledge and experience I already had to solve today's problems and challenges			
Attitudes			
I was open to using many different pieces			
I was curious about what each piece might do			
I tried to use each piece in a different and creative way			
I enjoyed and worked hard for the whole session			
I worked well with others in my group and gave them ideas			
I talked to students in my group about how to make our ideas better			
I was able to explain my ideas clearly to others			
Process - Problem Solving	More than 10	5 to 10	Less than 5
How many ideas did I/my group come up with?			
How many different types of ideas did I and my group have?			
How many different models did I/my group make?			
When I look at all of the other models in the class - How many original ideas did I/my group have?			
	I am at a high level	I am at a medium level	I am at a low level
Overall Creativity			

STUDENT SELF REPORT CARD

Environment	All of the time	Some of the time	None of the time
I had all the resources I needed to show my ideas			
I felt safe sharing my ideas with my classmates			
I felt safe sharing my ideas with my teacher			
I used specific knowledge and experience I already had to solve today's problems and challenges			
Attitudes	All of the time	Some of the time	None of the time
I was open to using many different pieces			
I was curious about what each piece might do			
I tried to use each piece in a different and creative way			
I enjoyed and worked hard for the whole session			
I worked well with others in my group and gave them ideas			
I talked to students in my group about how to make our ideas better			
I was able to explain my ideas clearly to others			
Process - Problem Solving	More than 10	5 to 10	Less than 5
How many ideas did I/my group come up with?			
How many different types of ideas did I and my group have?			
How many different models did I/my group make?			
When I look at all of the other models in the class - How many original ideas did I/my group have?			
Overall Creativity	I am at a high level	I am at a medium level	I am at a low level

I think I could improve my creativity by

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