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## Removing Barriers to Share Knowledge in Digital Transformation with LEGO® Serious Play®

**Sharon Cox, Deborah Evans**

Centre for Digital Transformation

Birmingham City University

Birmingham, UK.

[sharon.cox@bcu.ac.uk](mailto:sharon.cox@bcu.ac.uk)

[deb.evans@bcu.ac.uk](mailto:deb.evans@bcu.ac.uk)

**Abstract:** Digital transformation involves the use of technology to change the way organisations and industries operate. The success of digital transformation relies on cultural change; the willingness and ability of employees to share their knowledge and create a shared vision of the organisation. Individual barriers to share knowledge, such as lack of trust and communication skills; and organisational barriers to share knowledge such as organisation structure, culture and communication mechanisms; limit transformational change and are well documented. Storytelling is an established means to share knowledge. LEGO® Serious Play® (LSP) is a method that facilitates storytelling and initiates conversations, enabling tacit knowledge to be shared.

The aim of this paper is to evaluate the effectiveness of the LSP method to reduce the known barriers to knowledge sharing and construct a shared meaningful context for transformational change in a UK SME. The LSP method was used by trained LSP facilitators in a series of workshops involving all employees in the organisation. Each workshop culminated with a LEGO® model and a video recording explaining the model. Feedback was gathered from participants about their perspective on knowledge sharing. Six months later, the organisation's CEO was interviewed to determine the effectiveness of the method in facilitating sustained changes in knowledge sharing behaviour.

The use of the LSP method removed barriers to share knowledge by creating a trusting environment and providing an effective means for open communication in which everyone had an equal voice. The workshops produced a tangible shared model of the vision for the organisation in which all employees were invested. The playful nature of the method used is deceptive, concealing the rich and complex knowledge sharing processes, and the depth of cultural, organisational and individual transformation experienced during the workshops. LSP is a low-technology method that removes the barriers to share knowledge through cultural change, providing a shared vision for effective digital transformation.

**Keywords:** knowledge sharing, LEGO® Serious Play®, storytelling, digital transformation, shared vision, cultural change.

### 1. Introduction

Organisations engage with digital transformation in order to seek improvements in areas such as customer experience, efficiency and innovation (Kane et al 2016). There are many definitions of digital transformation (van Veldhoven & Vanthienen, 2019) emphasising different aspects such as technology (Fitzgerald et al 2013), business models (Sathananthan et al 2017) and business processes (Parviainen et al 2017). Many organisations fail to achieve business benefits of digital transformation (Fitzgerald et al 2013). In digital transformation it is important not to lose sight of the key purpose of the company in providing value to customers (Shaughnessy, 2018). Digital transformation strategies need to be customer-centric (Agrawal et al 2020). Kö et al (2019) suggest that although organisations may have clear objectives for initiating digital transformation, organisations are not always aware of the pre-conditions required for effective digital transformation.

Barriers to successful digital transformation relate to deficiencies in leadership, skills, training and senior management support (Bughin et al 2015). Although technology adoption is a key component of digital transformation, the ability of an organisation to change is also necessary (Ivančić et al 2019) because digital transformation involves both technical and cultural change (Shaughnessy, 2018). Before initiating a digital

transformation strategy, it is important to assess the organisation's culture in terms of its willingness or opposition to change, propensity for teamwork, and internal and external interactions (Agrawal et al 2020). Leaders who stimulate purposeful cultural change and empower employees to take risks are critical to the success of digital transformation (Larjovuori et al 2018).

Strategy-making involves three elements: knowledge gained from analysis, sharing of knowledge meaning and transforming identity (Roos & Victor, 1999). The process of strategy formulation can be regarded as a series of conversations (Roos & Victor, 2004) in which knowledge is shared. Digital transformation is facilitated by starting with key actors, organising for communication and planning for building competencies (Dugstad et al, 2019).

Digital transformation involves the formulation of new business models (Sathanathan et al 2017). A business model tells the story of how value is delivered to customers (Margretta, 2002). Haggège & Vernay (2019) suggest that story-making is appropriate for business modelling because it is intuitive, creative, reduces complexity, and fosters the teamworking and trust building needed for collaborative teams.

Riege (2005) suggests that small and medium-sized enterprises (SMEs) struggle to share and exploit knowledge due to a lack of strategic focus. Barriers to sharing knowledge need to be overcome in SMEs in order to develop the shared vision, define new business models and initiate the cultural changes needed for the development and implementation of successful digital transformation strategies.

The aim of this paper is to evaluate the effectiveness of the LEGO® Serious Play® (LSP) method to reduce the known barriers of knowledge sharing and construct a shared meaningful context for transformational change in a UK SME. The paper first reviews barriers to sharing knowledge before exploring the role of storytelling as means to address these barriers. The LSP method is then introduced as a means to establish a shared vision and cultivate a knowledge sharing culture. An overview of the LSP workshops conducted in an SME in the UK is then presented, followed by the findings from the workshops and an interview with the Chief Executive Officer (CEO) six months later. The paper concludes by examining the role of LSP in transforming the organisation's culture to facilitate knowledge sharing in readiness for successful digital transformation.

## 2. Overcoming barriers to sharing knowledge in digital transformation

Sharing knowledge is a key aspect of harvesting capability in digital transformation (Thornley et al, 2016). The terms knowledge sharing and knowledge transfer are often used interchangeably, though they differ in terms of scope, focus, direction and perspective (Paulin & Suneson, 2012). For example, knowledge sharing takes place between individuals and knowledge transfer take place between units such as teams (Paulin & Suneson, 2012). This paper uses the term knowledge sharing to refer to the exchange of knowledge between individuals within and across organisational teams to create a shared vision for digital transformation.

Riege (2005) classified barriers to sharing knowledge as being individual, organisational and technological barriers (relating to integration and compatibility). Over ten years later, many of these barriers to sharing knowledge remain, for example, Mtsweni & Mavetera (2018) report a range of similar barriers to sharing tacit knowledge such as time, trust and lack of communication skills. Typical barriers to sharing knowledge are shown in Table 1.

**Table 1:** Barriers to sharing knowledge.

<b>Individual</b>	<b>Organisational</b>	<b>Cultural</b>
Time.	Structure.	Trust.
Fear.	Communication mechanisms.	Organisation culture.
Lack of awareness.	Job description.	Social differences.
Communication skills.	Job security.	Cultural differences.
Workload.	Lack of managerial direction.	
Lack of understanding of knowledge.	Limited strategic alignment.	
Not understanding benefits of sharing knowledge.		

Approaches to overcome barriers to knowledge sharing include providing time and space for sharing knowledge and demonstrating the importance of knowledge sharing (Riege, 2007). Casimir et al (2012) suggest that there are two antecedents for sharing knowledge: expected association (strengthening social relationships within the organisational culture) and expected contribution to the organisation.

Organisations need to provide the space and communication mechanisms to enable individuals to share knowledge, creating a shared vision of the digitally transformed organisation within a culture of communication and trust. It is important to establish trust in practitioner communities in order to share knowledge effectively within the community (Perkins & Cox, 2004). Kharabsheh (2007) suggests that there is a correlation between levels of trust and the level of knowledge sharing within an organisational community. A culture of open communication can facilitate and motivate employees to willingly share knowledge (Schumann & Tittmann, 2015; Stojanović-Aleksić et al 2019). However, a shared vision is also necessary to develop the cooperation that facilitates knowledge exchange (Rodríguez & Wilson, 2002) in open communication. A shared vision is described as common long-term goals (Inkpen & Tsang, 2005) of an anticipated future held by employees in an organisation (Ismail & Zulkifly, 2019), forming the “social aspects of a cooperative relationship” (Roueche et al 2014). A shared vision can facilitate and mediate knowledge sharing (Inkpen & Tsang, 2005; Ismail et al 2016), bringing colleagues together to achieve organisational goals (Ismail & Zulkifly, 2019). Lack of shared vision can be a barrier to digital transformation (Fitzgerald et al 2013). An organisational culture which has shared values supports knowledge sharing, as shared values enable mutual trust to be developed (Stojanović-Aleksić et al 2019).

### **3. Storytelling and LEGO® Serious Play®**

#### **3.1 Sharing knowledge through storytelling**

Storytelling is well established in society as a means to share knowledge and maintain cultural values (Lugmayr et al 2017) through socialisation (Swap et al 2001). Storytelling creates personal connections (Denning, 2011) providing a means to share and retain knowledge through shared contexts (Snowden, 2002). Stories are used in organisations to communicate past actions (Swap et al 2001) and are a component of the cultural web (Johnson et al 2017). Key knowledge of what is important in the organisation is reflected in the characteristics of heroes and villains. Stories can transfer explicit knowledge, for example, about managerial systems and simultaneously convey implicit knowledge, such as company values; however stories are unsuited to developing core capabilities and critical skills (Swap et al 2001).

The storytelling narrative enables ideas to be communicated in memorable ways (Sumbal et al 2017), using three main elements: plot, characters and outcome (Swap et al 2001). Stories are more likely to be remembered and acted upon if they are engaging, vivid and related to personal experience (Swap et al 2001). The experience of interaction with the narrative enables the listener to interpret meaning from the narrative, within the context of existing knowledge and experience, creating a mental model which transforms the narrative into knowledge (Lugmayr et al 2017). Knowledge can therefore be gained without realising it (Swap et al 2001). Barriers to sharing knowledge highlighted in section 2 such as organisational structure and lack of trust can be overcome through storytelling. For example, storytelling triggers an emotional response that is needed to develop trust (Lugmayr et al 2017). Organisational hierarchies can be transcended using stories (Weick & Browning, 1986), creating a trusting environment to share knowledge (Haggège & Vernay, 2019).

#### **3.2 Sharing knowledge through Storytelling with LEGO® Serious Play®**

LEGO® Serious Play® (LSP) is a method to engage teams (Blair & Rillo, 2016). Models are created using LEGO® bricks as metaphors to communicate ideas. The models are shared with others through a process of storytelling; participants tell the story of the model, explaining what each brick or subset of the model represents. Serious play enables the creativity and social dimensions of play to be harnessed to address organisational challenges (Roos & Victor, 2004). LSP is founded on Piaget’s constructivism theory and on the principle that mental models can be formed as physical bricks are put together (Hadida, 2013). The physical manipulation of LEGO® bricks provides mental stimulation which Hayes & Graham (2020) suggest lead to transformative learning.

LSP workshops can be used to develop strategic vision (Hadida, 2013) and to support knowledge management (Ibragimova. & Korjonen, 2019). LSP transcends language (Hayes & Graham, 2020) as models provide a rich and effective way to communicate ideas (Hadida, 2013). Telling the story of the LEGO® model gives the model meaning, enabling perceptions about the organisation to be shared (Oliver & Jacobs, 2007; Hadida, 2013). Barriers to sharing knowledge highlighted in section 2 relating to trust, organisational structure and communication skills can be overcome using LSP. The LSP method is appealing and provides a means to share ideas in a non-judgmental environment, supporting team cohesion (Hadida, 2013), connecting participants and levelling organisational hierarchies (Langley & Wolstenholme, 2018).

#### 4. LEGO® Serious Play® workshops

Following recent restructuring, an SME providing IT service solutions in the UK sought to build the foundations for successful digital transformation. LEGO® Serious Play® (LSP) workshops were held to construct a shared meaningful context for transformational change. The LSP method comprises of three stages referred to as three build Levels (Blair & Rillo, 2016):

- Build Level 1: Individual models are built to introduce participants to building symbolic or metaphorical models.
- Build Level 2: Shared models are created as participants work together to develop a model that represents a combined view of a given problem or challenge.
- Build Level 3: System models are created as participants work in groups to model a systems solution to a given problem or challenge.

Workshops were facilitated using LSP build level 1 and build level 2 involving all 22 employees in the SME with trained LSP facilitators. The objective was to engage employees in rich dialogue and create a model to reflect the core values that would underpin digital transformation. Participants took turns in narrating the story of the model as it evolved until a consensus was reached that the model was a good representation of their collective vision. Video recordings were used to capture the story of the shared models. At the end of the workshops the design thinking method, I like I wish what if (d.School Stanford, nd.) was used to gather participant feedback. This is a quick and simple method to gather insightful feedback. Further workshops were planned later in the year to undertake build level 3 to model the digital transformation strategy but have been delayed due to Covid-19 restrictions.

##### 4.1 Results of workshops

Each workshop resulted in the construction of an agreed LEGO® model (known as a shared model) representing a shared vision for customer experience in the organisation. An example of a shared model from the workshops is shown in figure 1.



**Figure 1:** A shared model of a shared vision of customer experience

##### 4.1.1 Participant Perspective

Participant feedback from the workshops is shown in Table 2.

**Table 2:** Participant feedback from workshops

I like...	<ul style="list-style-type: none"> <li>- Working together.</li> <li>- Shared goals ethos.</li> <li>- Continuous improvement.</li> <li>- Growing as individuals and collaboratively.</li> <li>- Shared beliefs and values.</li> <li>- Creativity.</li> <li>- Problem solving.</li> <li>- 'Minsterness' [referring to essence of company].</li> <li>- Shared space.</li> <li>- Embeds / absorbs.</li> <li>- LEGO®.</li> </ul>	<ul style="list-style-type: none"> <li>- Engaged / motivation.</li> <li>- Creative mind.</li> <li>- Recall.</li> <li>- Alternative perspectives.</li> <li>- Expressive.</li> <li>- Confidence builder.</li> <li>- Voice for all.</li> <li>- People interaction.</li> <li>- Speaking visually.</li> <li>- Thinking outside the box.</li> <li>- Listening.</li> <li>- Visual.</li> </ul>
I wish...	<ul style="list-style-type: none"> <li>- Keep the model.</li> <li>- More time.</li> </ul>	<ul style="list-style-type: none"> <li>- Inclusive (all employees in same session).</li> <li>- We could set the agenda.</li> </ul>
What if?	<ul style="list-style-type: none"> <li>- We could maintain enthusiasm.</li> <li>- Add other things to the model.</li> <li>- Use LEGO® in-house to problem solve.</li> <li>- We could identify our own challenges.</li> </ul>	<ul style="list-style-type: none"> <li>- Build model to support own development plan / solve issues.</li> <li>- Use LEGO® with customers.</li> </ul>

#### 4.1.2 CEO perspective

A semi-structured interview was held with the CEO six months later to reflect on the impact of LSP on addressing barriers to sharing knowledge, and its contribution to supporting digital transformation. LSP was found to have had a positive influence on the organisation but momentum was lost because the workshops scheduled to plan the implementation of the vision were postponed due to Covid-19. The following principles from the workshops are still evident in the company:

1. Embed corporate values.
2. Teamworking.
3. Break the barriers between silos and build bridges.
4. Open communication.
5. Everyone's contribution is important.
6. Use visual metaphors.
7. Use storytelling.
8. Importance of a shared vision.
9. Creative mindset.
10. Mindfulness and reflection.
11. Need to ask the right questions.

## 5. Discussion

The results of the workshops were analysed identifying cultural, organisational and individual transformations witnessed during the workshops.

### 5.1 Organisational transformation

Lack of time is a common barrier to sharing knowledge. The workshops provided the time and space for colleagues to talk to one another. A significant factor of the workshops was that colleagues came together from different teams within the organisation. This was partly to ensure business continuity; however, mixing organisational teams broke down the barriers built by the organisational structure and the physical barriers to communication caused by the office layout.

In one of the videos of a shared model, some mini-figure bricks representing customers, with lots of money bricks, had been placed to one side of the model; they represented the 'forgotten and neglected' customers

who pay for the service but need little help. A participant said "we mustn't forget these customers", which sparked a conversation. The team agreed that they needed to find a way to improve customer service to this group of customers. The model enabled participants to look beyond the function of their organisational team to appreciate the wider organisation and the services provided to a range of customers. This exchange strengthened relationships between organisational teams, supporting Casimir et al (2012) view that expected association is an antecedent for sharing knowledge. The CEO noted that since the workshops there has been more communication between teams:

*"LEGO® workshop was the bringing together of all the new people and all the old people (we have brought in 6 or 7 new members of staff in a very short time). Needed to bring them together and the LEGO workshop was beautiful for that... 100% the teams have gelled following the workshop. "*

## 5.2 Individual transformation

The workshops provided a safe environment, connecting participants across hierarchal levels (Langley & Wolstenholme, 2018) and overcoming barriers to knowledge sharing identified by Riege (2005) relating to fear and lack of communication skills. The principle of LSP is that "everyone builds, and everyone shares" their model (Blair & Rillo, 2016, p.14.) within a formalised etiquette. As the stories of the models are narrated, pointers are used to direct the attention of participants towards the model being shared; the focus on the model rather than on the individual facilitates the open sharing of ideas. In LSP the bricks are used as metaphors and the facilitator challenges participants if different phrases are used to refer to the same bricks; this helps to anchor the story of the model. Anchoring in storytelling is important to avoid losing track of the storyline (Haggège & Vernay, 2019).

The phrase 'finding a voice' was used by Hayes & Graham (2020) to explain the impact of LSP on participants. The same phrase was used by the CEO commenting that LSP had enabled a colleague to "find their voice" when they were tasked with describing a brick model using the metaphor of a chicken. The model did not resemble a chicken and the participant not only found their voice but earned new respect from their colleagues as they really listened to her story describing the model. This event now forms a story that is embedded into the shared cultural history of the organisation.

Participants reported a number of benefits by using LEGO® as a communication medium (Table 2). LSP reflects the "tactile immediacy of manipulating the clay" that Minzberg (1987) refers to in his analogy of a potter's wheel where "managers are craftsmen and strategy is their clay" (Minzberg, 1987). In LSP the phrase "think with your hands" (Blair & Rillo, 2016, p.29) is used to represent this intrinsic hand-mind, manual-cognitive, connection to strategy formulation.

## 5.3 Cultural transformation

Build level 1 enabled participants to externalise their view of the organisation. In build level 2, participants created a shared model representing a consensus view of the organisation and its values. Shared values and a shared vision are essential for digital transformation (Rodríguez & Wilson, 2002). Three shared models were built which incorporated the view that "Customer is king [shown on a pedestal]; we are working for them!" This represented a common view developed through the workshop. At another point a participant said these are "happy satisfied customers". This was followed by giggles highlighting some underlying cultural issues that were being surfaced through the LSP method. This reinforces the importance of the cultural shift needed to be customer-centric in digital transformation (Agrawal, et al 2020).

The CEO explained that the shared model had demonstrated how everyone's contribution to the organisation is important.

*"[LSP] jump started cultural change. Too often team building days are team breaking days...everyone felt part of the model as they could see their mini figure or their LEGO® element in the model. They were proud of the model and saw their part in the solution; they could see that their contribution was important."*

Oliver & Jacobs (2007) report similar comments at the end of a LSP workshop, reflecting a sense of pride in what had been achieved with the guiding principles shared through the models. The participants asked to keep the final shared model as a physical representation of their shared vision, which could be used to communicate with other stakeholders. This supports the findings of Haggège & Vernay (2019) that the resulting story artefacts can be more powerful than typical communication tools such as the business model canvas.

An organisational culture which has shared values supports knowledge sharing (Stojanović-Aleksić et al 2019). The workshops helped reveal the extent to which employees had embraced the core values of the organisation. Prior to the workshop, the CEO had conducted a capability and commitment graph. Observing the way participants engaged in the workshop and the stories they told with their models, helped to support and evidence the findings of the commitment graph.

A significant change that has taken place in the organisation since the LSP workshops relates to the role of storytelling. The CEO and employees have created a shared story, using nautical metaphors, to tell the story of how the company has evolved since being restructured and to set the shared vision for the future. They have formed a narrative around the preparation of the ship HMS Minster [using a ship as a metaphor for the organisation], to ensure it is seaworthy, has the right crew and is setting its course. Such stories enable ideas to be communicated in memorable ways (Sumbal et al 2017). Employees regularly refer to the story and its associated metaphors, demonstrating their commitment to the vision. The CEO emphasised that establishing a shared vision has had a calming effect on the organisation, embedding corporate values, and recognising that “we are in this together”.

## **6. Conclusion**

The LSP workshops created a context for organisational transformation; an environment that enabled physical and structural boundaries to be broken for employees to connect. Feedback from participants showed that the LSP method provided a means to enable open communication, addressing issues relating to lack of communication skills. LSP transformed individuals, giving them a voice and changing the way they were perceived by their peers. The shared model facilitated the development of a shared vision, embedding core values but also establishing the principles needed for digital transformation. The CEO reported that the workshops demonstrated the power of storytelling for communicating ideas, sharing knowledge and creating a shared vision to which employees can commit. This has had a significant and lasting impact on the SME, which has fully adopted storytelling as a communication method to drive digital transformation. From this study, the LSP workshops created connections between people and connected everyone into a shared vision, removing the barriers to share knowledge and initiating the individual, organisational and cultural change needed for effective digital transformation. Facilitators have recently been trained to deliver LSP workshops online within Covid-19 restrictions. Future workshops are planned with this SME to support the implementation of the shared vision; in addition, workshops are being replicated in other organisations to validate findings.

## **7. Acknowledgements**

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