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Do LEGO® Models Aid Reflection in Learning and Teaching Practice?

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ABSTRACT

In this paper we describe the use of LEGO® models within assessment of the Postgraduate Certificate in Academic Practice (PGCAP) offered at the University of Salford. Within the context of the PGCAP, we model innovative and contextualised assessment strategies for and of learning. We challenge our students, who are teachers in higher education (HE), to think and rethink the assessment they are using with their own students. We help them develop a deeper understanding and experience of good assessment and feedback practice in a wider context while they are assessed as students on the PGCAP. We report on an evaluation of how the LEGO® model activity was used with a cohort of students in the context of the professional discussion assessment. We share the impact it had on reflection and the assessment experience and make recommendations for good practice.

Keywords: academic development; reflection; assessment; professional discussion; LEGO®; creativity and learning journeys; metaphors.

Introduction

We describe the use of LEGO® models within the assessment strategy developed for the Learning and Teaching in Higher Education (LTHE) module. This forms part of the blended and multi-disciplinary Postgraduate Certificate in Academic Practice (PGCAP) offered at the University of Salford to staff who teach or support learning. The programme leads to a recognised teaching qualification in higher education. It is accredited by the Higher Education Academy (HEA) and the Nursing and Midwifery Council (NMC). Successful completion of the PGCAP, therefore, leads also to fellowship of the HEA and nurse teacher status for nursing and midwifery professionals. Within the PGCAP, we model innovative and contextualised assessment strategies both for and of learning. We help our students who are teachers in HE to think and rethink the assessment they are using with their own students. We also help them develop a deeper understanding and experience of good assessment and feedback practice in a wider context whilst being assessed as students on the PGCAP and developing as reflective practitioners. Students are partners on the programme and actively participate in the programme's provision, evaluation and enhancement processes, including the shaping of the assessment design (HEA, 2012).

We use social media portfolios on the programme in combination with non-portfolio based activities, such as professional discussions and observations of teaching, on the LTHE module, to capture media-rich reflective learning journeys. We use these for formative and summative assessment and transform assessment into a contextualised and practice-based experience that is fair, objective and flexible. It enables all students to engage and express themselves in a way that helps them learn. At the same time, through ongoing dialogic feedback, it helps them develop and grow throughout a module. In this context, assessment can be seen as learning that is authentic (Smith & Nerantzi, 2013), directly linked to practice, and therefore useful and motivating for students.

The intervention

How it all began

The PGCAP programme was offered for the first time in September 2010. Initially, all assessment components of the LTHE module were captured exclusively in the students' proprietary portfolios and were assessed by tutors. After evaluating the portfolio approach used in year one, we came to the conclusion that the system used to develop reflection, carry out assessment and capture learning progressively was problematic for the majority of students. The portfolio was mainly used as a repository of evidence, provided in most cases close to the submission deadline, and not as a space for learning and development and feedback conversations between tutors and peers. How could the assessment be enhanced and also become a collegial reflective activity (Moran & Dallat, 1995)?

Changes

The LTHE module review led to the development and implementation of a revised assessment framework. Social media were used to construct portfolios. The assessment included portfolio-based components in combination with face-to-face elements to facilitate ongoing learning and teaching conversations in a safe environment. For the LTHE module, this meant the introduction of the professional discussions, a summative assessment component conducted in week ten, towards the end of the semester. The professional discussions are 30-minute conversations with a panel consisting of a PGCAP tutor and an academic from the institution who is recognised for their excellence in teaching. During this discussion, the student is asked to critically reflect on their learning journey during the module and share their development story in a conversation with panel members. Students provide an insight into how the module has shaped them as a teacher and what impact it had on their practice. The professional discussions provide an opportunity for reflection and sharing, and make the

assessment process fairer and more transparent; students' learning is captured and academic standards assured. It is contextualised assessment based on conversation, reflection and storytelling. Moon (2010) states that constructing and telling stories within education can be a powerful vehicle to making sense of one's own experiences, enhancing reflective learning and sharing messages with others through conversations. These enable further processing and might also lead to the challenging of ideas and assumptions that can lead to new discoveries and further learning. Engaging stories enable the listener to connect emotionally with the experience and the situation of the storyteller. Stories also enable the listener, in this case the panel members and assessors, to ask further questions in order to seek clarification and offer the student additional opportunities to think and reflect on their learning.

After offering professional discussions for the first time, it became clear that these contributed positively to the assessment of learning and were seen as a more objective summative assessment strategy. They provided a useful opportunity for further dialogues between tutors and students and extended conversations beyond module and programme boundaries. Furthermore, the professional discussions provide a useful insight for external panel members on the work of our students taking the PGCAP and identify opportunities to strengthen links and explore opportunities for collaborations. Many of the students' learning stories that emerged were rich and insightful. However, it was noted by panel members that some students felt extremely nervous during the professional discussion, which appeared to hinder them from participating fully and reflect more deeply and critically. This was also confirmed through students' reflections.

A solution was needed to help students verbalise their reflections and story while also helping them to feel more relaxed in preparation for, and during, the professional discussion. Could a more playful approach help students? These questions led to the introduction of the LEGO® model-making approach.

Introducing model-making

Play is a vital aspect of human life. It gives wings to our imagination, it helps us express ourselves more freely, it gives us joy. Adults' play seems more goal-orientated than children's play, but it still creates the conditions and the environment in which we may be less self-conscious and more curious to try new things (Gauntlett, 2007; Brown, 2010).

Research suggests that the process of model-making helps individuals and groups to focus their thoughts and identify creative connections of ideas, experiences and people. Gauntlett (2011, p. 4) suggests that "thinking and making are aspects of the same process" and building models out of LEGO® can aid reflection and expression of thoughts through metaphors. Knowledge construction through the process of making models – both mental and physical – is supported by Piaget's (1980) theory of constructivism (re-creating reality through perceptual construction) as well as by Papert's idea of "learning-by-making" (Papert, as cited in Gauntlett, 2007), which he defined as "constructionism".

LEGO® bricks are low-tech and used widely by children, and increasingly by adults, to create models or artworks and to visualise thoughts, ideas and reflections using metaphors. Playing with LEGO® helps curious minds to make new discoveries through building. More generally, activities such as model-making can take away pressure. They can bring individuals and groups into a state of "in-flow" (Csikszentmihalyi, 1996). Could model-making transform assessment into something enjoyable?

The LEGO® Serious Play® methodology is, for example, used in business contexts for team building, idea generation and other applications (Gauntlett, 2007). It is a term to describe the creation of models as metaphors through which individuals or groups visualise experiences, ideas and feelings and share stories (Gauntlett, 2007;

Ackermann, Gauntlett, & Weckstrom, 2009). We wanted to explore whether the use of LEGO® model-making would aid reflection in the context of summative assessment within the PGCAP programme. Would the creation and use of a model be a helpful addition to the professional discussion? Would it help students to tell their story in a more visual way, aid reflection, articulate ideas and express and communicate values?

The professional discussions on the LTHE module resemble Lange's (2010) creative conversations, especially after the introduction of the LEGO® model-making feature. Lange used photographs as conversation triggers in one of her research projects with photography students in order to create opportunities to engage students in meaningful and insightful conversations about their learning. It also resembles narrative inquiry as described by Cousin (2009), who states that participants in this type of research might be asked to bring an object to the interview. Reflection-in- and on-action (Schön, 1983) is activated during the process of making as well as through analysing and sharing their work with others (Clews, 2003), as happens during the professional discussions.

The model-making idea was discussed with students. This led to the development of the LEGO® model-making feature within the semester two professional discussions assessment (academic year 2011/12).

The process

The process of the professional discussions is transparent. Students receive detailed information in advance, including the assessment criteria and how they are going to be assessed. A preparatory session for the professional discussion is offered to answer students' questions.

The 4C LEGO® Learning Framework (LEGO® Education, 2010) is useful as it links well with the LEGO® model-making approach used for the professional discussions. The 4C Framework consists of the following stages as described in Jensen (2012):

- Connect: reflecting on experiences and learning
- Construct: constructing of a model linked to this reflection
- Contemplate: verbalising and analysing the model
- Continue: extending engagement through social media by sharing and commenting on models made by others.

Connect

On the day, a LEGO® model station is set up. Students are invited to arrive 30 minutes in advance of their professional discussion. This time is used by students for focused thinking and reflection on the module and what they have learnt. This stage is also a good opportunity for students to get together and reassure each other about the assessment ahead.

Construct

Large boxes of LEGO® bricks in a variety of shapes, colours and sizes are provided. Students create their LEGO® model, through which they will be asked to share their story. It can be as simple or as elaborate as they want. A caption is added on a piece of paper.

Contemplate

The model is presented together with the caption, creating a text and model relationship (Meistre & Belluigi, 2010). It is used as a trigger to aid reflection and conversation. It reveals further insight into thought processes and allows wider sharing and meaning-making beyond the individuals who participated in the professional discussion.

Continue

Students are asked to take a photograph of their model and the caption. The photographs are uploaded afterwards to the PGCAP

Flickr account and shared as open educational resources. The LEGO® model photos can then be embedded in students' portfolios and thus provide further opportunities for reflection, sharing and critique and continue portfolio-based conversations and learning.

The professional discussion starts with introductions, and immediately afterwards the student is asked to use their LEGO® model as a trigger to reflect on their learning journey. The student becomes progressively less dependent on the model as the conversation develops. Questions are asked by panel members seeking clarification and extending thinking when required in order to collect as much detail as is necessary for assessment purposes. After completion of the professional discussion, the student leaves the room and the panel makes a fair and consistent assessment based on the engagement observed. The results are entered directly into the student's portfolio, which is made available as a private comment and can only be seen by the student and the panel member, keeping the assessment result confidential.

Findings and discussion

The LEGO® approach was used with 20 students studying on the LTHE module from January to June 2012. Five external panel members were involved.

Features of evaluation research, as described in Cousin (2009), and experiential research (Stake, 2010) have been applied to explore the LEGO® approach used in the context of the professional discussions. The aim of this is to gain a deeper understanding and knowledge of the realities and experiences of the students and panel members involved. The method used to collect qualitative data was individual interviews. Open questions encouraged reflection on the experience during the interview. The responses provided the researcher with an insight into the individual and collective experience from both students and panel members. The interviews were an important instrument to collect qualitative data, gain a deeper insight into the students' and panel members' experiences (Stake, 2010) and conduct an analysis that was of value to further develop the approach for future cohorts. The interviews were recorded using video and transcribed manually using Word. The analysis was conducted using an Excel spreadsheet, where all data from Word were transferred, analysed and grouped. The themes below emerged and are presented with the variations of the individual experiences followed by a commentary.

1. Method:

Students commented about the LEGO® model activity itself in relation to the assessment and how it influenced and shaped their performance. The following variations were noted:

- Helped in getting a more natural conversation. One student noted: "It was a really nice ice-breaker which took the edge off the professional discussion." A panel member commented: "The LEGO® models were important to kick-start their discussion and reflections and how they introduced their learning path and journey."
- Helped students to focus and be reflective before and during the professional discussion. One student stated: "[The LEGO® model] allowed me to focus on the journey as a whole going through the PGCAP rather than going through how I might go through the questions in the professional discussion and panicking about what I was going to say."
- Some students were sceptical as this was not a common practice for them and not something they had experienced before in the context of assessment. One student commented: "At first I was a bit sceptical about the whole LEGO® play thing as often before I like to plan and I thought it would get in the way of my head space before the discussion." Panel members also acknowledged the novelty of this approach.

- Helped students to share experiences and extend reflection before and after completion through the use of social media. It was noted that the collective preparation was fun too. One student, for example, said: "After the professional discussion we took photos and put them on Flickr which gave us a chance to compare and discuss."
- Panel members noted that this method helped students prepare better for the assessment.

Commentary

There is evidence that the method worked well, despite the initial reservations of a small number of students. The shared experience of creating the LEGO® model seems to have been a positive one for all students, strengthening their social connections and helping them relax. It took the pressure off and helped focus on the task ahead and kick-start reflection (Gauntlett, 2011). During the discussions, it was also noted that the models were useful for students and panel members in being and staying focused and deepening reflection. They also acted as "memory triggers" (Meistre & Belluigi, 2010).

2. Feelings:

Students noted how the LEGO® model-making activity influenced their emotional state both in advance and during the professional discussion. The following variations were noted:

- Students felt more relaxed. One student, for example, mentioned: "Modelling in LEGO® was useful as I was nervous about going into the professional discussion and it relaxed the atmosphere." This voice is echoed by the majority of students and panel members.
- Some students felt initially overwhelmed with the task because of its novelty and the self-evaluation of their creative abilities: "Initially it was a bit overwhelming because I am not very good at building things." Another student noted: "I always panic at these things as it's forced creativity. But once you start doing it, it's absolutely fine."

Commentary

Assessment can make students feel anxious. The LEGO® model-making activity made students feel more at ease with the assessment, although some were concerned as they felt that they lacked the creative capacity or did not have the experience of creating LEGO® models. As the LEGO® model-making activity was not completed in isolation, peer support played a vital role in changing preconceptions. It made students feel relaxed and engaged with the task while also recognising the value of it. In many cases, it was observed that students were having fun and some were absorbed in the task or "in-flow" as described by Csikszentmihalyi (1996) and Papert and Harel (1991).

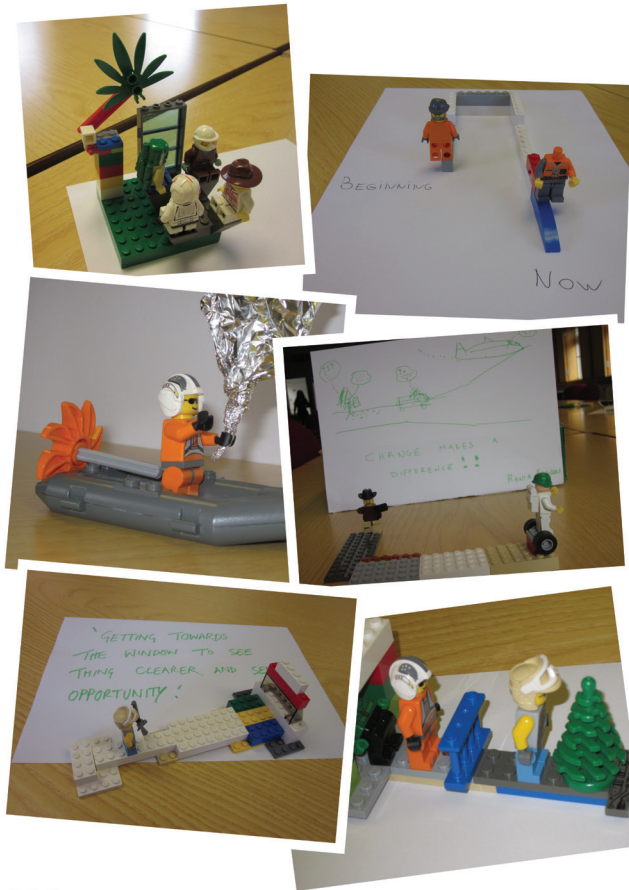
3. Impact:

Students commented on how this activity, and their involvement and experience in it, has impacted on their thinking.

- Considering using similar approaches in their own practice. One student said: "I'm a big fan of play and I will be looking for ways to use with my students." One panel member also stated: "I will be stealing this idea for myself."
- Openness and willingness to experiment with novel approach is vital for enhancement of practice.

Commentary

It was very encouraging that panel members and students started thinking about how they could use LEGO® model-making in their



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own practice after being immersed and experiencing such an activity first hand. Other students encouraged their peers to be open to experimentation.

4. Communication:

Panel members commented on how the LEGO® model-making activity influenced communication and in what ways. The variation of their observations is noted here:

- Metaphors were used by students to capture their reflections, journeys and learning, as noted by a panel member: “It is evident that LEGO® acts as powerful metaphors for them [the students] to examine their practice, to find ways of looking at things they do and to justify why they do them and how they articulate them.”
- Stories were visualised through the LEGO® model and storytelling and story sharing. “LEGO® modelling gives them a medium they can talk about and show in different ways, in a pictorial or 3D way, and actually seeing that they can conceive of and use their imagination to tell a story that needs to be told; to be understood by others allows them a space they would not get to otherwise.”
- Students used creative ways to reflect on their learning, as one of the panel members stated: “As a talking point, excellent; and as a creative means of thinking about their reflection, excellent.”
- Unconscious learning surfaced. One panel member stated: “Some of the representations within the LEGO® models were unknown to themselves [students] until we started the discussions and these emerging properties and symbols they weren’t aware of were dissected and brought to the fore.”

Commentary

The LEGO® models seem to have made a real difference to the depth of reflection, meaning-making and communicating learning. It was

evident that the LEGO® models made students’ stories come alive. Storytelling and sharing aided by LEGO® models enabled students to express more creatively and visualise their learning and reflections during the professional discussions. The metaphors were rich and insightful and provided “telling clues as to how people see things” (Cousin, 2009, p. 48). It is especially interesting that there is evidence which confirms Meistre’s and Belluigi’s (2010, p. 158) observation that “artwork can create experiences and reactions which are either implicitly or explicitly buried in the work”, since some of the learning surfaced only through discussing the model with the panel members. This led to unexpected insights in line with Hallgrímsson’s (2012) observations about explorative modelling.

Lessons learnt

Evaluating teaching practice is extremely important and vital to refine approaches used and to enhance the student experience. Including colleagues, students and external partners in this process makes the evaluation procedure a shared activity that can drive innovation.

Within the PGCAP programme, we model innovative practices through active experimentation. This is done in everyday classroom practice, face-to-face and online, where reflection and open conversations with students are used to learn from our experiences. In addition, they feed into smaller and larger changes at module and programme level that have an impact on student learning and the student experience.

Introducing the LEGO® model-making activity in the context of the professional discussion was an experiment, and, as such, it was risky. However, as our evidence shows, it worked. Overall, it made students feel more relaxed and enabled them to communicate their reflections on their learning journey in a visual way. Some might have thought twice about introducing this activity as part of an assessment strategy, as it could easily be regarded as childish and inappropriate for higher education. Our curiosity led us to investigate whether LEGO® model-making could aid reflection and liven up the professional discussion while also transforming it into a more stimulating and enjoyable experience. The module tutor decided to go ahead with a discussion with students on the module. Valuable lessons were learnt and are presented below.

What worked well

- Students embraced the LEGO® model-making activity despite some initial reservations.
- The limited time available made students focus during the creation of their model.
- Making the individual LEGO® models in a communal space where students could interact with their peers enabled peer support and helped students to relax ahead of the assessment.
- The activity ‘relaxed’ the students prior to and during the professional discussions, enabled them to be less uptight and encouraged them to be themselves.
- The models were all unique and provided a rich picture of students’ thinking, reflection and learning journeys during the module based on metaphors.
- The LEGO® models were useful to start the conversation as they made students feel more relaxed.
- The LEGO® models helped the panel tease out some of the implicit elements identified in the models and progress the discussion in a more natural way based on the model itself.
- The LEGO® models helped panel members to quickly understand the student’s learning journey and connect with the student’s story.

- The activity enabled students to be less intimidated by academic narratives with which we in academic development are familiar.
- Reflection is brought to, and discussed as part of, the assessment scenario. The assessment acts as a further learning opportunity for students and panel members.
- Sharing photographs of the LEGO® models via Flickr was useful and students embedded some of them into their portfolios and extended reflection after their professional discussions.

What didn't work so well

- Some students had negative preconceptions about using LEGO® in the context of higher education, which initially hindered them from fully engaging in this activity and seeing value in it.
- Visualising thinking and reflection using metaphors is not something that comes naturally to individuals if they are not used to this type of learning. This might hinder their ability to relax into the activity and develop their thoughts using visual models.
- As some students are less used to being creative within a tight timeframe, some might have felt under pressure to create a model within the 30 minutes provided in advance of the professional discussion.
- The lack of LEGO® warm-up activities during the module might have influenced negative feelings and insecurity in some cases.
- Some students seemed to be focusing more on the artistic side of their model than the messages they wanted to communicate through it.

Good practice and transferability

When planning a LEGO® model-making activity consider the following:

- Start small and use formative activities initially. Introduce a simple LEGO® building task and add complexity progressively. Warm-up activities (Gauntlett, 2007) are very important to familiarise students with the medium and help them to develop the skills and understanding of how to make meaningful statements through models (Lange, 2010).
- Think about what you want your students to achieve through the activity and why this approach can make a real difference. Put together a rationale and share this with your students.
- Provide clear instructions about the LEGO® activity to your students and additional facilitators.
- If you are thinking of using LEGO® model-making as a resource for assessment, remember to introduce such activities early on in a module, and before assessment takes place, so that students become familiar and have the opportunity to practise.
- When using a LEGO® activity as part of the assessment, make sure that you assess based on specific criteria. For example, if the LEGO® model-making task is used to aid reflection and this is what you assess, avoid giving marks for the model itself and its

artistic or creative value. Unless you are assessing the design, this needs to be made clear to the students.

- Enough LEGO® bricks are required so that all students have access to a large enough variety of bricks in different shapes, sizes and colours that will enable them to visualise their thoughts and reflections using LEGO®. Remember also, less can be more. It is not about the bricks but what the bricks represent.
- Consider using social media to share the LEGO® models and enable further related reflections and learning conversations.
- Consider introducing more playful learning, teaching and assessment strategies throughout a programme of study in order to create an atmosphere of curiosity, investigation and innovation.

Conclusions

Our findings from this study suggest that the LEGO® model-making intervention was a meaningful addition to the professional discussion assessment within the LTHE module of the PGCAP. Evidence revealed that it made participating students feel more relaxed in preparation for the discussion and focus on the assessment task ahead. The LEGO® model provided a useful 'hook' for reflection during the discussions and students were more relaxed. The articulation and sharing of students' reflection, and learning through reflections captured in metaphors, was powerful and engaging for panel members. It provided rich evidence of engagement with the module. It also helped assessors create a more complete profile of the student and make a fair and consistent assessment based on the engagement observed.

It is acknowledged that the current study is limited, as only a relatively small number of students and panel members participated. Further research is also required with whole cohorts in order to gain further insights into the student experience linked to the LEGO® model-making activity in the context of the professional discussion, and the effect it has on reflection and performance within the assessment setting, so that findings can be generalised.

Biographies

Chrissi Nerantzi was an Academic Developer at the University of Salford. She led the Postgraduate Certificate in Academic Practice. Chrissi also supported individuals and teams across the institution to enhance teaching practices. Chrissi changed institutions in October 2013 and is now working in the Centre for Excellence in Learning and Teaching (CELT) at Manchester Metropolitan University. Her current research interests are around innovative teaching practices and the role of play, games and digital technologies in higher education. Chrissi is also a PhD student in open collaborative learning.

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