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Deep Learning Design for Social Innovation: Participatory Radio for Developing 21C Skills with Disenfranchised Learners

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Abstract. Deep Learning Design has been proposed as an approach to Technology Enhanced Learning (TEL) that foregrounds principles of learning and context over simply extrapolating the affordances of new technologies. An original application of this approach has been within contexts necessitating social innovation to promote the inclusion, non-formal learning and employability of disenfranchised learners across Europe – RadioActive101. This approach has actively developed, implemented and evaluated five radio hubs with at-risk young people and other disenfranchised groups to develop digital competencies and employability skills for the 21st Century. This Learning Design and associated competencies are mapped to a progression and accreditation model linking EU key competencies to RadioActive101 activities and performances that are recognised through open electronic 'badges'. Evaluation findings showed particularly positive results, and impact and value beyond the non-formal learning of technical and employability skills, such as improvements in confidence, self-esteem and general self-efficacy of individuals and organisational learning and development. We conclude this article by asking how and whether current approaches to learning design can accommodate such essential psychosocial dimensions of learning.

Keywords: deep learning design, non-formal learning, 21C skills, participatory radio, co-design, evaluation.

1 Introduction: Deep Learning Design of Participatory Radio

Deep Learning Design [1] has been proposed as an approach to Technology Enhanced Learning (TEL) that foregrounds principles of learning and context over simply extrapolating the affordances of new technologies.

Deep learning design applies profound insights from the learning disciplines to exploit the affordances of the technology in order to empower learners to achieve educational goals. (Boyle & Ravenscroft, 2012)

This definition was expanded through a set of principles proposed by Ravenscroft and Boyle [2], stating that Deep Learning Design (DLD) involves:

1. A contemporary articulation of appropriate theory, or suitable conceptual framework;
2. Design that is not predicated on latest technologies but does clearly operationalise the functionalities and affordances of these technologies;
3. Learning as interaction in context;
4. An evaluative approach linked to the theoretical or conceptual foundations and the design process.

An original application of this approach has been within contexts necessitating social innovation to promote the inclusion, non-formal learning and employability of disenfranchised learners across Europe – RadioActive101. DLD is particularly relevant to these contexts because conventional learning design that is usually predicated on traditional learning institutions is simply not suitable for these groups that are typically excluded and at-risk, and therefore we need a much richer understanding of their particular learning contexts. Learning Design in these contexts has to look well beyond instructional design, and instead address contextual barriers, opportunities and complexities whilst also addressing the psychosocial platform for education, such as engagement, motivation [5] and the role of confidence and self-efficacy. The RadioActive101 initiative operationalised DLD through:

1. Having its theoretical foundation on a combination of Friere's [3] approach of emancipatory learning through lived experience and Vygotsky's [4] notion of scaffolding in the zone of proximal development;
2. Articulating the affordances of internet radio in terms of the 'whole space' of surrounding activities related to radio production, broadcasting and promotion;
3. All learning occurring within the organisational and 'real life' contexts of the learners – such as youth and other community organisations;
4. An evaluative approach that begins with a problematisation of the contexts linked to a Frierian and Vygotskian articulation of practices, followed by formative and summative evaluations.

So, specifically, RadioActive101 is an innovative education project that has developed and implemented a radical technology-enabled Learning Design to promote the inclusion, engagement and non-formal learning of those at-risk of exclusion, across Europe. It does this through harnessing primarily internet radio, or, as our motto states: *RadioActive101: Learning through radio, learning for life!*

2 DLD, Evolving Contexts and the Implementation of RadioActive101

Through adopting a DLD approach, and accepting the primacy of context, we realised that the incorporation of a new technology and its affordances (the 'whole space' of participatory radio) meant that we had to iteratively co-design the learning approach with the learners and their organisations. This led to implementing five national RadioActive101 'stations' (or hubs) accessible via a European Support Hub (radioactive101.eu). Through making the radio shows the target groups are developing

digital competencies and employability skills 'in vivo' that are transferable to the 21st Century workplace. These competencies and skills align with six of the EU Key Competencies for Lifelong Learning, namely: Communication in Mother Tongue; Digital Competence; Learning to Learn; Social and Civic Competencies; Censure of Initiative and Entrepreneurship; and, Cultural Awareness and Expression. We have developed a progression and accreditation model linking these competencies to RadioActive101 activities that are recognised through electronic badges. These badges provide digital recognition measures and represent proficiencies relevant to further education or employment, in particular related to the knowledge and creative and digital industries. But, to realise these learning activities there was evolution and co-development of the learning context, or design, following three overlapping phases:

- Phase 1 Piloting: Problematisation, Training, local Hub setup and initial shows;
- Phase 2 Professionalising: *in situ* Training, greater Quality Control of shows and Badge negotiation and awarding;
- Phase 3 Operationalising: sustaining, embedding and expanding.

During Piloting in Phase 1, which typically lasts 2-3 months, the contexts (e.g. youth organisations, schools, multi-generational centres, HE settings) are investigated, understood and engaged through a process of 'Problematisation' [5], which means 'conceptualise in order to change'. Once this has been performed and the discourses and relationships between all key actors have been established, an initial intensive two day training workshop is performed that results in the key actors (e.g. young people, youth workers, school children in deprived areas, learning disabled young people) in the organisations being trained in essential skills that include: planning & organisation; understanding copyright, file management & record keeping; journalistic methods; creating, performing and arranging content; audio editing and promotion and reflection. These skills are acquired to a level where these can be developed through further scaffolding from the core RadioActive101 team.

During Professionalising in Phase 2, which runs up to 12 months, the Radio Hubs are producing, broadcasting and archiving live, typically monthly, radio shows, the themes and topics for which are decided by the learners themselves based on important issues in their lives (e.g. knife crime, women and body image, mental health, *etc.*). During this phase the core team give greater responsibility and activity to the key actors in the organisations, and scaffold contingently based on the need. For example, building on core technical skills to improve the 'sound levelling' and guiding on how to organise content items to achieve a tighter and defined 'narrative flow'. And similarly, the key 'radio actors' in the organisations cascade their skills to others locally without the direct involvement of the core team that initially trained them. A concrete pedagogy is realised through the key radio activities being linked to competencies via our (electronic) badge negotiation and awarding system - linked to 13 bronze, 13 silver and 13 gold badges. To date we have awarded 176 badges to our radio-activists – who may be the young people attending an organisation and the staff who also take on roles and responsibilities to deliver RadioActive101. Further scaffolding through 'training in action' and facilitation improves the level of competencies gained through the production of shows of increasing sophistication, variety and quality.

During Operationalising in Phase 3, which overlaps with Phase 2 and runs continuously, measures are taken to sustain, embed and extend RadioActive101. The ongoing improvements in competencies linked to the radio production processes are realised and tracked through the radio-activists' progression from bronze through to gold badges.

3 Evaluation of RadioActive101

The design and evaluation of RadioActive101 was intertwined and followed three phases that informed one another. This progressed from Problematisation (Phase 1) - that is similar to what has been previously called 'illuminative evaluation' [6], formative evaluation (Phase 2) of the developing radio hubs, and then a summative evaluation (Phases 3). The first two phases of the evaluation have been reported elsewhere [7] so in this paper we focus on the summative evaluation that followed an 'Appreciative Inquiry' approach [8]. This focused on the impact of the RadioActive101 project at the level of beneficiaries, involved organisations, project partners and the community - through an online survey of 89 actors, approx. 17% of those involved throughout the entire project. It was a challenge to get a higher response rate because the population was, by their nature, difficult to engage and easily distracted, often 'digitally excluded' and their participation in some cases lay too far outside of the evaluation period. The main hypothesis of the evaluation methodology [9] was based on the pedagogical dimension that internet radio and social media could play a major role in supporting engagement and non-formal learning of people at risk of exclusion. The outcomes clearly show that the highest impact is perceived on self-confidence and motivation, creativity, management skills and communication. In the words of one young person involved, the project provided a "*sense of freedom, sense of self-value, sense of co-creation*".

Giving more detail - the highest level of impact was reported for the direct beneficiaries, our radio-activists (92.1%), followed by project staff (86.8%), the organisation (84.2%) and the community (76.3%). The highest reported impact was on self-confidence and motivation (90.8%), followed by creative skills and abilities (88.2%) and then some specific employability and communication skills (both 85.5%). The lowest impact was on mathematical competencies (35%), which supports the validity of responses, as this was the least emphasised aspect of the project.

4 Conclusions: Deep Learning Design and Relevance, Engagement and Motivation

This paper has shown how Deep Learning Design (DLD) is applicable to designing innovative learning contexts that address significant learning problems, namely the inclusion and non-formal learning and employability of disenfranchised learners. It has also demonstrated a number of dimensions in which traditional learning design is weak, such as: rigorously understanding what the learning problem is (problematisation); iteratively co-developing a design in ways that engages learners in their 'real-life' situations; addressing the reality of practically and intellectually including and engaging

disenfranchised learners; and, generally, addressing how the psychosocial and motivational platform for learning, based on dimensions like confidence and self-efficacy are the 'engine' for learning and development. TEL research will need to embrace these dimensions and the complexities they give rise to if it is to acknowledge that education is for all, and should empower people to change their lives for the better.

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