

CONTEXT, CULTURE AND CURRICULUM:
A CROSS-NATIONAL COMPARATIVE
STUDY EXPLORING FORMATIVE
ASSESSMENT IMPLEMENTATION IN
IRELAND AND SCOTLAND

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List of acronyms and abbreviations

FA – Formative Assessment

CfE – Curriculum for Excellence

OECD – Organisation for Economic Co-operation and Development

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Introduction

Formative assessment is renowned internationally for its ability to raise student achievement while increasing capabilities for self-directed teaching and learning (Bell & Cowie, 2001; Leahy, Lyon, Thompson, & Wiliam, 2005; McDonald & Boud, 2003; Shepard, 2005). This form of assessment is becoming more prevalent in curriculum documentation and education policy worldwide and therefore it is essential for research to examine how the social setting of the classroom and the characteristics of the wider school system are having an effect on formative assessment implementation within schools (Black & Wiliam, 2012).

This research seeks to describe the enactment of formative assessment in Ireland and Scotland, two countries in the midst of curriculum reform.

Background to the research

This study is focused on how students learn through different assessment practices and how the social and educational climate of a classroom can influence the everyday procedures of teaching and learning. More specifically the research concentrates on formative assessment as described by Black and Wiliam:

Practice in a classroom is formative to the extent that evidence about student achievement is elicited, interpreted, and used by teachers, learners, or their peers, to make decisions about the next steps in instruction that are likely to be better, or better founded, than the decisions they would have taken in the absence of the evidence that was elicited.

(Black & Wiliam, 2009, p. 9)

Although Black and Wiliam among others have many varying definitions for the process of formative assessment the definition above highlights three fundamental aspects of formative assessment. Firstly it emphasises the importance of appropriate feedback feeding into student learning, and how effective feedback processes can promote greater student autonomy in learning. Secondly it reiterates Cowie and Bell's description of formative assessment (1999) emphasising that the key premise of this form of assessment is to enhance the learning during the learning, meaning that teachers are aware that their practice needs to be altered to optimise student learning. In addition, it takes into account the different players in the assessment process: teacher, peers and individual students and underlines how formative assessment is a practice involving all those present in the classroom not the teacher alone.

The focus of this research is on the five strategies for formative assessment as described by Wiliam & Thompson (2007) and how they support student learning in science lessons. Their framework

began the investigation into the important theory surrounding formative assessment, however it does not make up its entirety. Further work completed by Black and William emphasises the point that formative assessment needs to move from a “mere list of activities, with the dangers that this carries of superficial adoption” (2009, p. 9). With that in mind it was felt that successful implementation of any educational innovation would be dependant on much more than prescribed pedagogy and a recipe for classroom practice, and subsequently the research took on a more holistic approach to examining formative assessment and its implementation in classrooms.

	Where the Learner is Going	Where the Learner is Right Now	How to Get There
Teacher	Clarifying learning intentions and sharing criteria for success	Engineering effective classroom discussions and tasks that elicit evidence of learning	Providing feedback that moves learners forward
Peer	Understanding and sharing learning intentions and criteria for success	Activating students as instructional resources for one another	
Learner		<i>Activating students as the owners of their own learning</i>	

Table 1: Framework Relating Strategies of Formative Assessment to Instructional Processes (William and Thompson, 2007)

When examining the context of an education system, it is vital to understand the role that the teacher plays in contributing to the discourse of teaching, learning and assessment. Devine, Fahie and McGillicuddy (2013) found that teachers often have a strong belief of what *good teaching* is and how they would optimally like to teach. According to these teachers, *good teaching* consists of a passion for teaching and learning, social and moral dimensions, reflective practice, planning learning effectively and a love for children. What is interesting to note is that these *good teaching* traits are very similar to what Gleeson (2012) signifies as qualities lacking in Irish teachers. It would appear that teachers are very aware of what effective practice looks like on paper however the practicalities of everyday classroom life are hindering optimum pedagogy, therefore a study examining the societal factors effecting pedagogy is necessary in this era of curriculum reform so that policy makers and educational practitioners are informed as to how these changes can be optimised to improve student learning.

In this study, classroom culture represents the individualistic lesson traits that effect student learning. These characteristics include the classroom environment, interactions among students and teachers in lessons, and the physical structure of the classroom that influences how teaching and learning takes place. Studies have shown that positive, supportive interactions between teacher and

student have a profound influence on students' engagement with and motivation to learn during lessons (Ryan & Patrick, 2001; Tas, 2016), while other research notes how the spatial layout of a classroom can promote or inhibit teaching and learning activities (Amedeo & Dyck, 2003). Research that examines multiple aspects of classroom culture is scarce in the literature; hence this study will add to the body of knowledge surrounding classroom culture in Ireland and Scotland.

Both Ireland and Scotland are undergoing curricular reform at present with emphasis now being on both formative and summative methods of testing, and the importance of feedback in the process of learning. While curriculum modification at lower-secondarily level in Ireland is a rather recent reform with the introduction of the new Junior Cycle (2015), Scotland has overturned its national curriculum completely by introducing the Curriculum for Excellence (CfE) that serves students from early childhood to upper secondary education (2006). Livingston and colleagues note that there are many contributing factors as to how curriculum is enacted in an education system including historical, cultural, political and economic influences (2015). Teachers inevitably play a key role in enacting the curriculum as they are at the driving seat of teaching and learning in classrooms (OECD, 2005) while other research suggest that curricula should be flexible to adapt to individual class needs, and students should be involved in choosing specific topics to be study (Priestley, Biesta, Philippou, & Robinson, 2015). Curriculum reform is a concept familiar to both countries involved in this study and the written curriculum of both Ireland and Scotland will be explored as to how teaching and learning is impacted by these new innovative initiatives.

Research aim

The aim of this research is to investigate how student learning is nurtured, particularly what assessment processes promote student learning and how these assessment processes come to be operational within schools. In this context, student learning is considered to be any ability that enables them to become more independent in their learning and encompasses such traits as self-assessment, peer-assessment, and co-operative group work. Teachers who provide students with feedback that moves learning forward and set clear learning goals for students additionally develop students' learning.

The overarching research questions underpinning this research ask:

1. How is formative assessment implemented in science classes in Ireland and Scotland?
2. What are the factors that promote or inhibit formative assessment practice in science classes in both countries, and how can these be explained?

Factors in this case refer to influences on teaching, learning and assessment such as classroom culture, school context, and curriculum and assessment policy.

Furthermore the main research objectives of this study are to:

- Observe teaching, learning and assessment practices during science lessons to identify the various factors that promote or inhibit formative assessment pedagogy.
- Appraise formative assessment practice during science lessons to examine what strategies are prevalent; what methods are scarce, who is involved in the assessment process and the distribution of responsibility in terms of formative assessment.
- Identify what teachers and principals believe to be the biggest influences on pedagogy both within and external to the classroom.
- Consider student's beliefs about teaching, learning and assessment within science lessons to identify what pedagogy is optimal to improve their learning skills.
- Investigate the influence of policy and curriculum on classroom practice to identify the challenges and possibilities for policy learning and sharing in relation to second level education across Scotland and Ireland.

Research methodology

This research project is in its third year. The project began as a Masters of Literature in September 2014 and grew into a PhD project in December 2015. At present the research is being conducted at doctoral level on a part-time basis at the Department of Education at Maynooth University.

The research will generate four case studies using a mixed-method approach to the collection of data. *Figure 1* below outlines the research design:

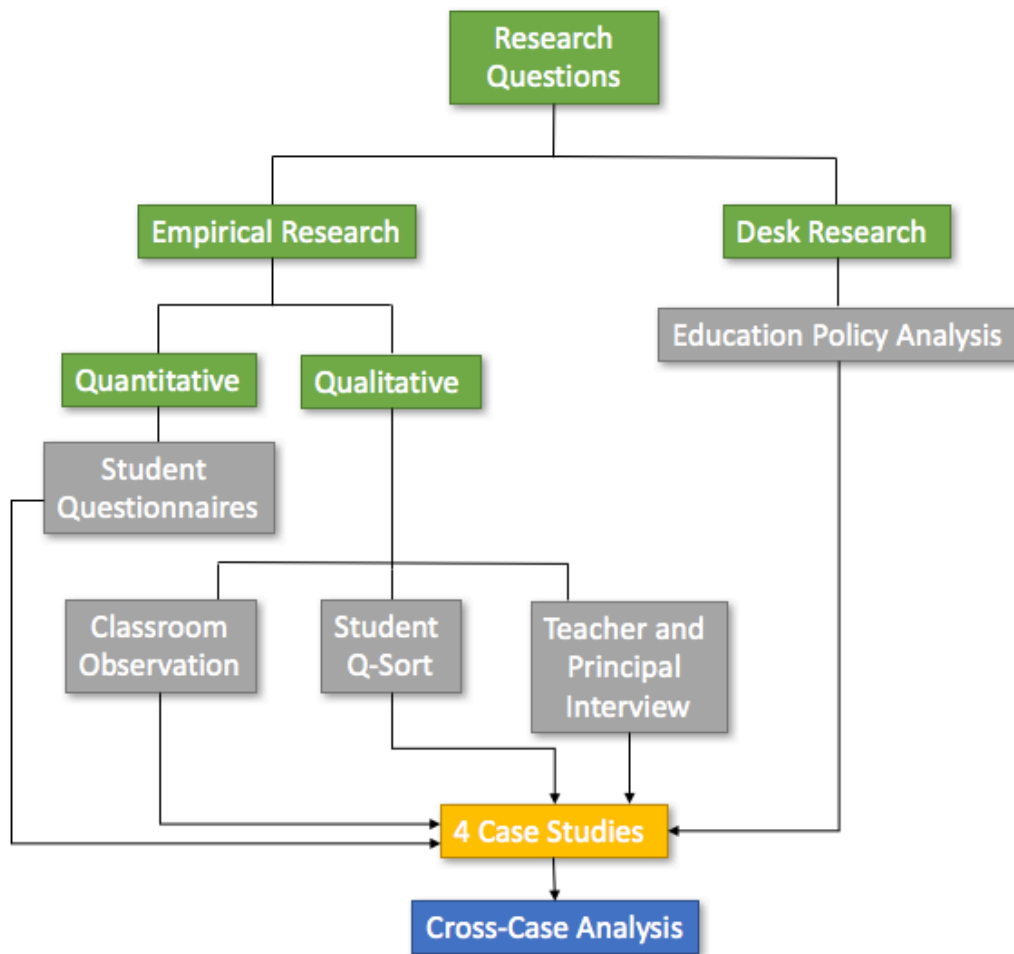


Figure 1: Research Design

Data Collection and Analysis:

The following methods will be used to generate data:

- Desk research: comparative analysis of education policy relating to curriculum, teaching, assessment and learning in both countries.
- Observations and video recordings of teaching and learning in all eight science classrooms.
- Individual interviews with each participating teacher and their school principal prior to classroom observation.

- Q-Sort exercises (a ranking activity of between 40-50 statement cards) with a sample of the case study students in each school (6 students from each class, 3 male and three female, 48 students in total).
- Questionnaires completed by the all case study students in each school (approximately 192).

The analysis of the qualitative data will follow a general inductive approach (Thomas, 2006). This approach allows “research findings to emerge from the frequent, dominant, or significant themes inherent in raw data, without the restraints imposed by structured methodologies” (p.238). This method was chosen to allow for emergent themes that may be overlooked through other methodologies. Analysis will be guided by the research questions and objectives that will help to identify a number of a priori themes while allowing for flexibility for other themes to emerge. The quantitative data derived from the Q-Sort activity will undergo factor analysis. This process will be aided by PQ-method software (Schmolck & Atkinson, 2002) designed to quantitatively analyse Q-Sorting’s.

Theoretical Framework:

The approach of Activity Theory (also known as Cultural-Historical Activity Theory or Socio Cultural Activity Theory) will be utilised throughout this study. The work of Vygotsky was particularly influential in building Activity Theory as he promoted the need for holistic education that takes account of what goes on outside the classroom. Havnes (2004) posits that research need to look beyond the individuals participating and look at the cultural systems and mechanisms that determine action patterns. This is perhaps best explained by Engeström & Miettinen:

“Individuals act in collective practices, communities, and institutions. Such collective practices are not reducible to sums of individual action; they require theoretical conceptualisation in their own right. When individual action is the privileged unit of analysis, collective practice can only be added on as an more or less external envelope.”

(1999, p. 11)

It is Engeström’s depiction of the *Elements of Activity Systems* (1987) that best illustrates how an Activity System can influence the type of assessments that occur in science classrooms. The language used in *Figure 2* depicts the various components necessary to achieve the desired outcome in the by transforming the *Object* into its intended *Outcomes*. The primary focus of any activity system is the apex of the triangle consisting of the *Tools*, the material or physiological artefacts that are used in the transformation process, the *Subject*, the individual or group of agents being transformed, the *Object*, being the physical or mental product sought acted upon by the subject and the *Outcomes*

consisting on the desired goal (for example a learning or behavioural goal). The *Object* is the aspect of the activity system that connects the individual actions of the subject to the collective activity of the whole system, as both the individual subject and the external societal factors (*Rules*, *Community*, and *Division of Labour*) have a part to play in achieving the *Outcome(s)* of the *Object*, with the movement from *Object* to *Outcome* functioning as the motive of an activity giving a broader meaning to actions (Engeström, 1999).

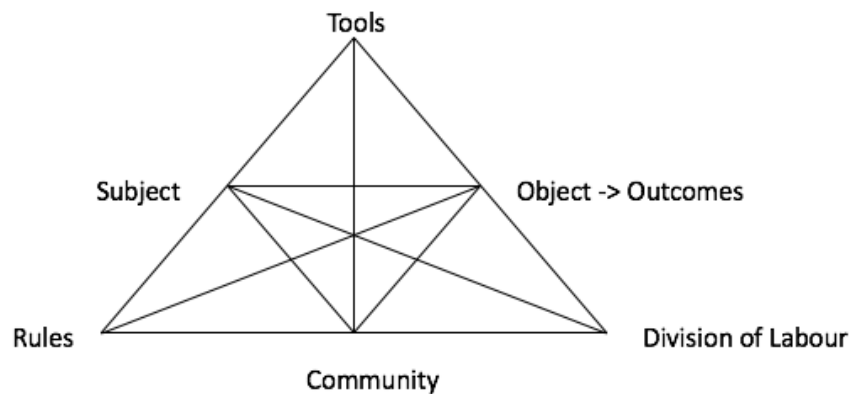


Figure 2: Engeström's model of an activity system (1987)

Further to the top tier, the activity system takes into account the cultural and contextual factors that are often overlooked in a study relating to classroom practice including the societal *Rules*, influence of the wider *Community* and the *Division of Labour*, i.e. how the various agents participating in the activity work to achieve the intended outcome(s).

In this research the *Tools* at the apex of the triangle will refer to the various methods used in classrooms to implement FA. The *Subjects* will include those agents involved in FA including the teacher, individual student and groups of peers. The *Object* denotes how the aim of FA is typically to improve student learning while the *Outcomes* can include (among others) increased social skills, improved academic attainment and strengthened self-directed learning within students. Furthermore, the bottom tier of the triangle will be a crucial aspect of this study as it explores the relationship between the *Rules* (how classroom learning is organised), the *Community* (school and wider community) and the *Division of Labour* (who is responsible for the participation in FA) and how these elements will be essential in understanding the nature of formative assessment in science lessons.

Conclusion

In conclusion, this research aims to identify the impact that different assessment processes have on student learning capabilities and how factors relating to teaching and learning such as curriculum reform, school context and classroom culture influence the decisions made in the classroom with regards to assessment. It is envisaged that the fieldwork for this project will be completed by autumn 2017 with the final thesis being submitted during winter 2018.

References

- Amedeo, D., & Dyck, J. A. (2003). Activity-enhancing arenas of designs: A case study of the classroom layout. *Journal of Architectural and Planning Research*, 20(4), 323–343.
- Bell, B., & Cowie, B. (2001). The characteristics of formative assessment in science education. *Science Education*, 85(5), 536–553.
- Black, P., & Wiliam, D. (2009). Developing the theory of formative assessment. *Educational Assessment, Evaluation and Accountability*, 21(1), 5–31.
- Cowie, B., & Bell, B. (1999). A Model of Formative Assessment in Science Education. *Assessment in Education: Principles, Policy & Practice*, 6(1), 101–116.
- Department of Education and Skills. (2015). A Framework for Junior Cycle. Dublin: Department of Education and Skills. Retrieved from <http://www.education.ie/en/Publications/Policy-Reports/Framework-for-Junior-Cycle-2015.pdf>
- Devine, D., Fahie, D., & McGillicuddy, D. (2013). What is “good” teaching? Teacher beliefs and practices about their teaching. *Irish Educational Studies*, 32(1), 83–108.
- Scottish Executive. (2006). A Curriculum for Excellence: Building the Curriculum 1. Retrieved from https://www.educationscotland.gov.uk/Images/building_curriculum1_tcm4-383389.pdf
- Engeström, Y. (1987). *Learning by expanding: An activity-theoretical approach to developmental research*. Helsinki: Orienta-Konsultit.
- Engeström, Y. (1999). Activity theory and individual and social transformation. In Y. Engeström, R. Miettinen, & R. L. Punamaki (Eds.), *Perspectives on Activity Theory* (pp. 19–38). New York: Cambridge University Press.
- Engeström, Y., & Miettinen, R. (1999). Introduction. In Y. Engeström & R. Miettinen (Eds.), *Perspectives on Activity Theory* (pp. 1–16). New York: Cambridge University Press.

- Gleeson, J. (2012). The professional knowledge base and practice of Irish post-primary teachers: what is the research evidence telling us? *Irish Educational Studies*, 31(1), 1–17.
- Havnes, A. (2004). Examination and learning: an activity-theoretical analysis of the relationship between assessment and educational practice. *Assessment and Evaluation in Higher Education*, 29(2), 159–176.
- Leahy, S., Lyon, C., Thompson, M., & Wiliam, D. (2005). Classroom Assessment: Minute by Minute, Day by Day. *Educational Leadership*, 63(3), 18–24.
- Livingston, K., Hayward, L., Higgins, S., & Wyse, D. (2015). Multiple influences on curriculum decisions in a supercomplex world. *The Curriculum Journal*, 26(4), 515–517.
- McDonald, B., & Boud, D. (2003). The Impact of Self-assessment on Achievement: The effects of self-assessment training on performance in external examinations. *Assessment in Education: Principles, Policy & Practice*, 10(2), 209–220.
- OECD. (2005). *Teachers Matter: Attracting, Developing and Retaining Effective Teachers*. Paris: OECD.
- Priestley, M., Biesta, G., Philippou, S., & Robinson, S. (2015). The teacher and the curriculum: exploring teacher agency. In D. Wyse, L. Hayward, & J. Pandya (Eds.), *The SAGE Handbook of Curriculum, Pedagogy and Assessment*. London: SAGE Publications.
- Ryan, A. M., & Patrick, H. (2001). The Classroom Social Environment and Changes in Adolescents' Motivation and Engagement During Middle School. *American Educational Research Journal Summer*, 38(2), 437–460.
- Schmolck, P., & Atkinson, J. (2002). PQMethod (version 2.35). Retrieved from <http://schmolck.userweb.mwn.de/qmethod/downpqmac.htm>
- Shepard, L. A. (2005). Linking Formative Assessment to Scaffolding. *Educational Leadership*, 63(3), 66–70.
- Tas, Y. (2016). The contribution of perceived classroom learning environment and motivation to student engagement in science. *European Journal of Psychology of Education*, 31, 557–577.
- Thomas, D. R. (2006). Method Notes A General Inductive Approach for Analyzing Qualitative Evaluation Data. *American Journal of Evaluation*, 27(2), 237–246.

