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## Exploring Formative Assessment Using Cultural Historical Activity Theory

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### Abstract

Formative assessment is a pedagogic practice that has been the subject of much research and debate, as to how it can be used most effectively to deliver enhanced student learning in the higher education setting. Often described as a complex concept it embraces activities that range from facilitating students understanding of assessment standards, to providing formative feedback on their work; from very informal opportunities of engaging in conversations, to the very formal process of submitting drafts of work. This study aims to show how cultural historical activity theory can be used as a qualitative analysis framework to explore the complexities of formative assessment as it is used in higher education. The original data for the research was collected in 2008 by semi structured interviews and analysed using a hermeneutic phenomenological approach. For this present paper three selected transcripts were re-examined, using a case study approach that sought to understand and compare the perceptions of five academic staff, from three distinct subject areas taught within a UK university. It is proposed that using activity theory can provide insight into the complexity of such experiences, about what teachers do and why, and the influence of the community in which they are situated. Individually the cases from each subject area were analysed using activity theory exploring how the mediating artefacts of formative assessment were used; the often implicit rules that governed their use and the roles of teachers and students within the local subject community. The analysis also considered the influence each aspect of the unit of activity had on the other in understanding formative assessment practice. Subsequently the three subject cases were compared and contrasted. The findings illuminate a variety of practices, including how students and staff engage together in formative assessment activities and for some, how dialogue is used as one of the key tools to do this. In conclusion, activity theory is considered a useful methodological framework both from a research perspective, as in this paper, and one that can be used as a tool for the reflective practitioner to promote change in pedagogic practices.

**Keywords:** CHAT; Activity theory; Dialogue; Formative assessment

### Introduction

Understanding formative assessment and how it relates to student learning has for the last ten years, or so, been subject to a variety of studies and perspectives internationally, (Carless, 2007; McDowell, Sambell, Bazin, Penlington, Wakelin, Wickes & Smailes 2006; Nichol & Macfarlane Dick, 2006; Sadler, 1998; Yorke, 2003). It is not the intention of this paper to consider their opinions in detail, but rather to focus on the role that cultural historical activity theory (CHAT) can have in helping to understand formative assessment processes, and how cognizance of those processes might subsequently

influence the way student learning opportunities are designed within the curriculum. This includes consideration of learning theories and how this should influence the classroom approach. For the purposes of this paper CHAT is used interchangeably with activity theory.

For many tutors, their understanding of theory in relation to their own pedagogies may appear implicit in what they do, yet when asked, they often find it difficult to articulate their philosophical or theoretically informed approach. Bruner (1999:5) suggests that folk pedagogies dominate educators' thinking in how learning takes place, reflect 'deeply ingrained cultural beliefs about the mind' and are often tacitly held assumptions about how the mind works. Within the discourse of theory there are concerns about its multiple meanings (Thomas, 2007). It may be used in different ways; as a thinking tool to inform personal reflection, or as orientating principles, rather than a theory as representing an accepted body of knowledge (Thomas, 2002; Thomas, 2007).

CHAT is used as a thinking tool for exploring formative assessment practice in a school setting in New Jersey (Crossouard, 2009). Rather than as an analysis tool to generate new models or theoretical frameworks for formative assessment, it appears that Crossouard saw the value, in the use of CHAT, as being sufficient to explore the effectiveness of current educational practices. Benefits of the approach she suggests include a more holistic exploration of formative assessment task design and exploration of how relationships between staff and students influenced learning. Pryor and Crossouard (2008) also use CHAT to highlight the varying roles of tutors within the classroom, with the view that teachers need to understand these different subject positions more consciously. This has consequences for the role that students adopt as either active or passive participants in their learning. It is therefore the intention of this paper to show how CHAT can be used as thinking tool to reflect upon the pedagogic practice of formative assessment in higher education, the influences upon that practice (which may include implicit or explicit view of theoretical concepts of how students learn) and the resulting outcomes for students.

### **Cultural Historical Activity Theory and Formative Assessment**

Activity theory first originated within Vygotsky's (1978) cultural historical psychological theory of human development. The proposition is that development is dependent on how children and educators interact and share cultural tools. Tools can be internal or external, hence psychological or material tools, including language. First generation activity theory depicts the subject, object and those tools or artefacts that mediate the subject towards the object.

In considering formative assessment as an activity system, the object proposed is enhanced learning for students and that enhancement is brought about through the provision of and subsequent student engagement with feedback (see figure 1 adapted from Engeström 1987).

Essentially formative is defined as any assessment that "promotes learning by using evidence of where students have reached, in relation to their goals, to plan the next steps in their learning and know how to take them" (Harlen, 2006 :104). The term formative assessment is often used interchangeably with *assessment for learning* which Gardner (2006:2) suggests is a potentially better term as it is less likely to be seen as describing formative assessment as "the summative use of multiple assessments". For the purpose of this paper formative assessment is considered as any informal or formal assessment activity that does *not* contribute to accreditation or measurement of a student's learning. This type of activity can subsequently be converted into a range of outcomes, which may include feedback that corrects errors, provides information about new directions for learning, identifies knowledge gaps, affirms conceptual changes, and may develop a learner's metacognition. Outcomes may also lead to the enhancement of students' self regulation and an

increase in self efficacy if the design of the pedagogic practice takes account of seven principles of good feedback practice (Nicol & Mcfarlane Dick, 2006). The seven principles focus on ensuring students know what good performance looks like, opportunities for self assessment, high quality feedback, dialogue opportunities, positive motivation, opportunities to close the gap and the tutor using feedback to improve his or her teaching (Nicol & Mcfarlane Dick, 2006:203). Recent thinking situates formative activities, as part of an overall conceptualisation of how students come to understand assessment standards, within a cultivated community of practice model (Price, Rust, O'Donovan, Handley & Bryant, R., 2012). The key aspect of this model is that it is a student centred and active approach that is necessary to really make an impact on enhancing learning. Where tutors view it otherwise, taking a more traditional view, learning can be compromised, with students reliant on the passive absorption of standards and playing little in the way of being active agents in their own learning (Price et al., 2012). Additionally Molloy and Boud (2012) propose that what is often purported to be best feedback practice, is not proven to be quite as effective as one might suppose. This includes feedback that perpetuates an over-reliance of the student on the tutor; that larger volumes of feedback are not necessarily better and can be counterproductive; and that much feedback still fails to indicate to students as to how to move forward.

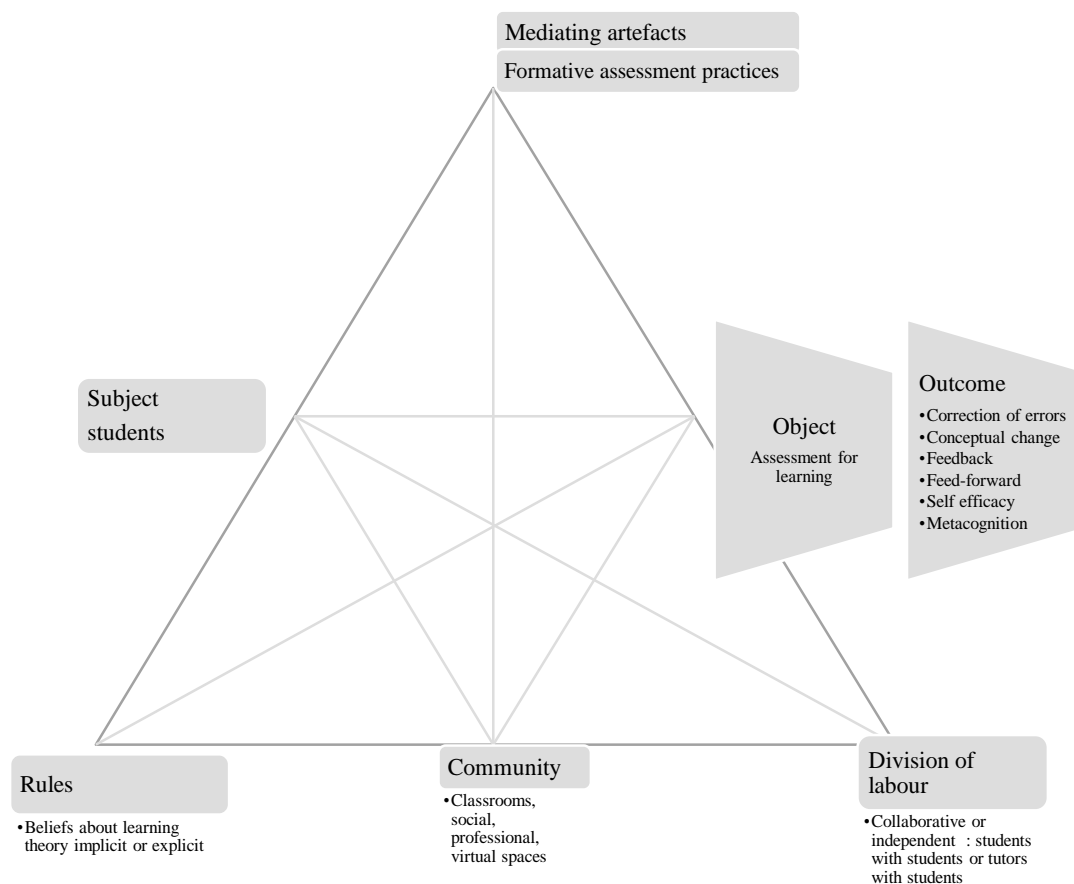


Figure 1. Formative Assessment as an Activity System (adapted from Engeström 1987)

Students are placed in the subject element of the activity system (see figure 1 adapted from Engeström 1987). Mediating artefacts consist of a range of tools employed, including both formal and informal tools, ranging from quizzes within the virtual learning environment and presentation opportunities, to formal tutorial support and informal classroom conversations. Tools include the physical and the psychological, written texts, the tutor themselves, and dialogue opportunities with both tutors and peers. The purpose of all the tools is primarily to provide feedback to students. It is

proposed that dialogue is a more effective tool as it provides better opportunities for feedback to become reconstructed, avoiding the misconceptions that may occur when information is just transmitted in one direction from tutor to student (Price, Handley & Millar, 2011). It is also important to note that feedback should come from a variety of sources including peers and ultimately internally generated by the students themselves.

Second generation activity theory extends the view of learning as one that is dependent on the social and cultural context in which learners are situated, a move away from the premise that behaviourist, cognitive and constructivist learning is viewed as a purely internal psychological event (Niewolny & Wilson, 2009). For Cole and Engeström (1993), human cognition is clearly influenced by other people, the way in which a subject interacts with others, the social rules that govern those interactions and how tasks are divided amongst the community group. It recognises as a principle that there are many voices, views and traditions influencing a system. In an activity system that focuses on the concept of formative assessment, these influences can quite powerfully alter expected outcomes for students. While the same tools might be used, the situations in which they are used, the expectations of how students should work with those tools, and how academics see their role in relation to that process, can all be different and therefore affect the expected outcomes. With this in mind, the rules influencing the activity system might include implicit understandings of learning theory, or subject-based views about the teacher's own particular pedagogy. James (2006) considers how theories of learning influence the ways in which assessment practice is enacted and suggests that improving effectiveness may necessitate teachers re-conceptualising their beliefs about how students learn. For example adopting theoretical perspectives that emphasise the social aspects of learning such as a socio-cultural approach requires students to participate in groups and to be involved in both the setting and the solving of problems (Price et al., 2012; James, 2006). Additionally, rules may include compliance with institution's regulatory frameworks and professional body standards, which may potentially reduce creativity in the design of formative assessment. Lastly second generation activity theory includes the division of labour which dictates how individuals are expected to work together. This highlights issues of power and status, between students and tutors, and also between the students themselves. Price and colleagues (2011) suggest that the relational dimension of feedback can strongly influence student engagement with feedback and is particularly influenced by the degree of reciprocity between staff and students.

Currently, five principles underpin third generation activity theory (Engeström, 2009). The first is that an activity system is an object-orientated and artefact-mediated unit of analysis, as described above, occurring within the context of other activity systems. The second principle suggests that it embraces the rich diversity and the often contradictory nature of human activity as a multi-voiced system (Engeström, 1999), considering relationships and interactions within the community. Described as a "source of trouble and source of innovation" (Engeström, 2009:57), this can be expanded across a network of interacting activity systems. The third relates to the fact that although they might seem static, activity systems have a temporal nature, so much so that Cole and Engeström (1993) suggest that change predominates, that equilibrium within the system is not the norm. This is an important consideration, highlighting the historical context of any activity system.

The fourth principle relates to contradictions within an activity system that can prompt developments. CHAT offers a useful framework for understanding tensions that exist within an activity system, whether that system is an institution, a programme of study, or a series of teaching sessions with a particular cohort of students. Knowing the source of the tensions is important to understand as this might influence change and development. For this reason, Hopwood and Stocks (2008) explicitly use CHAT in their study of the teaching development of doctoral students. They suggest that activity

theory is a useful tool to surface what they call 'systemic tensions' (p.190), and so go beneath adaptations that are often made to enable people to continue to function despite these tensions.

The fifth principle concerns what Engeström (2009) calls expansive transformation, radical change that occurs resulting in new ways of working. Finlay (2008) uses this aspect of activity theory to elucidate the learning that takes place when his participants (teacher education students) move between one activity system (the university) and another (the school setting). He suggests that his findings demonstrate how participants used the resources from the university to make sense of their practice, potentially promoting change for themselves in their workplace.

Formative assessment has already been subjected to analysis using activity theory but much of the investigation has occurred with data from the primary and secondary school sectors. The purpose of this study is therefore to use CHAT as a tool to reflect upon the pedagogic practices of formative assessment of staff in higher education. It is proposed that using activity theory can provide an understanding of the complexity of such experiences, about what teachers do and why, and the influence of the community in which they are situated. This will demonstrate how such a tool could be used to illuminate tacit practices with the potential for reconsideration of the design of future pedagogic practice. With that in mind, activity theory is used as a qualitative data analysis framework to explore the nuances of formative assessment, as reported by a small group of academics from a university in the UK.

### **Methodology**

The original research was conducted using a hermeneutic phenomenological approach to explore the lived experience of nine participants in relation to their formative assessment practice (Cresswell, 2007). A range of perceptions were uncovered with the resulting themes reported in a previous paper (Asghar, 2012). For this paper a case study approach was used to compare the different perspectives of five of the nine participants within three distinct subject areas (Pharmacy, Education and Sport Science) but within the same institutional context (Thompson, 1998). Each subject is treated as a unit of analysis, allowing pedagogic practices to be explored in detail, from a qualitative perspective using a framework of activity theory. The three subjects together constitute a collective case study (Silverman, 2005) that drawn together allow for comparison between them in a cross case analysis (Thompson, 1998) and it is those findings that are reported here.

### **Participants**

The profile of the participants in the three subjects varied: Mathew (Pharmacy) had worked in Higher Education for less than five years; Keith and Alan (Teacher Education), Chris (Sports Science) and Nick (Teacher Education) had more than 20 years experience. All the participants have been given pseudonyms to preserve their anonymity. All gave informed consent via email prior to the interviews.

### **Data Collection**

Data was collected at a large post 92 university in the United Kingdom over a two day period in 2008 as part of a larger qualitative study as described above (Asghar2012). Semi-structured interviews, lasting between 45 minutes and an hour, explored the views and opinions of formative assessment practices of five academic staff. Mathew (Pharmacy) and Chris (Sports Science) were interviewed, one to one, in their offices. Nick, Keith and Alan (the three Education staff) were interviewed as a group in a shared common room. Initially participants were asked to provide contextual information about their subject areas, and the numbers and year of study of students in their cohorts. Broad

open ended questions then sought the views of participants about their formative assessment practice and examples were solicited to illuminate how it was used in their subject areas. Taking care not to direct the conversation, further questions sought to understand what value participants placed on the use of formative practices in their teaching, how effective it was in enhancing student learning and if there were any particularly challenging aspects to its use. Finally participants were asked to describe what influenced the design of their practices and how they worked with others in their teams to provide these types of learning opportunities for their students. The interviews were audio-recorded and subsequently transcribed for analysis.

### **Data Analysis**

Analysis involved immersion in the data, reading and re-reading the transcripts individually, to consider the conceptions and practices of formative assessment within the different subjects (education, sport and pharmacy) each as a unit of activity. This meant asking questions of the data about what tools were used, as formative assessment practices, and what rules were in place influencing how those tools were used. Additionally the data were explored by questioning how, within those pedagogic practices; students were expected to participate i.e. as individuals or groups and what role the teacher adopted. In summary, relationships between individual aspects of the activity system were carefully reviewed in particular as to how rules, tools and division of labour, within the community, interacted and how this influenced the outcomes of formative assessment processes. Suggestions are made as to how the data expose the push and pull of each aspect of an activity system and how this can change the effectiveness and productivity of the consequent student learning. The data analysis also considered the historical perspectives of the activity systems and how this reflected the influence of change over their time on practice. The three separate subject cases were then drawn together through a process of comparing and contrasting the findings.

### **Trustworthiness**

Neither the university nor the participants were previously known to the researcher and access to the sample was through consultation with an academic contact who acted as a gatekeeper. Staff who had previously been involved in pedagogic projects, run by the universities teaching and learning centre, were invited to volunteer. It was important to remove any potential for bias that might occur by interviewing a previously known group of staff. This helped to avoid taken-for-granted aspects of academic life that might occur through familiarity. The interviews were conducted in an open and accepting style (Hallett, 1995), allowing the researcher's preconceptions to contribute to, rather than interfere with the collection of data. A reflexive approach (Holloway, 1997), that examined subjective and inter-subjective aspects of the process, continued throughout the data analysis ensuring that the findings reported are credible and a true representation of the participants' understanding of the phenomena.

## **Findings**

### **Historicity**

In considering the unit of analysis of a formative assessment activity system, it is important to note the impact that changing times have had on professional degrees, as evidenced through the data. Learning from a cultural historical point of view demonstrates that human behaviour varies between cultural contexts, and will change with the passage of time. This is defined within CHAT as historicity. The tutors from pharmacy and education both acknowledged the temporal nature of teaching and learning. The influences of changing professional practices related clearly to how they felt it best to design a curriculum, and how best to maximise the benefits of the use of formative assessment. For

pharmacy students, it was the move towards thinking beyond what was once a very technical approach to dispensing drugs to a much more holistic view of the patient. ('It's not just about dispensing the drugs.')

*"We've come away from a few years ago, where we were being very sort of picky about, if the label wasn't quite straight, we'd take a few marks off.... Because patients don't go home and say, oh, that's 68%, that's quite good."*[Mathew]

For education tutors, over time there was a move away from the tick-box approach required to meet professional standards, which they felt reduced the curriculum to something dominated by a reductionist, competency-based approach. While they still complied with this, because they had to, they had also managed to circumvent it. These academics recognised the need to prepare students for an environment different to the one in which they had been taught, in order that their students did not become fixed and rigid in their approaches to teaching.

*"It's interesting, for the first time in ten years since I've been working in higher education, we had an Ofsted (Office for Standards in Education) three weeks ago, and one of the things that they said to us was, you must continue to work from your principles. Now in the past Ofsted had been saying, do this, do that. Well I nearly fell off my chair. That justified the line that we've been taking, it's now approved that you can get people to think."*[Nick]

All of the participants were challenged due to growing student numbers, with increasingly stretched resources and a desire to continue with formative activities within these constraints. In addition, the data suggests that with time there has been a re-conceptualisation for some, with the recognition that assessment is more about learning and stimulating lifelong skills than purely the correction of errors.

*"It's better than it used to be, because it used to be you started with 100% and we'd hammer you down, take marks off for all those things you did wrong."*[Mathew]

## **Community**

The nature of community as a professional space was an important aspect for the socialisation of pharmacy students. Learning to be a professional was developed through the use of formative assessment strategies, particularly in dispensing practice in pharmacy. Within the community, the division of labour is such that the tutors are seen as guides who strategically assist students in a gentle way, allowing them to be part of a safe environment where it is possible to take risks. Mathew talks repeatedly about changing the process of teaching and learning to fit with the modern version of a pharmacist. He matches appropriate formative assessment strategies to the types of learning he wants his students to engage in.

*"And again that's part of the formative work that's done there, in terms of trying to make sure they don't go too far down the formula route."*

He sees it as part of his identity as an academic to be there to support that student learning process through formative activities. He talks about finding it hard to be able to conceptualise some of the formative activities because he believes it's what an academic does continually throughout their pedagogic practice. There is no expectation that students need to get things completely right, but rather that they should be able to use the opportunity that formative activities give to focus on learning and developing. There is a sense from the data that the rules of pharmacy practice are



relaxed within the teaching environment to allow students to take risks and learn from this process, to enable them to build confidence. This was in preparation for the real world, where, in contrast, the rules are of critical importance, as they need to be, since errors can have potentially fatal consequences.

Similarly the education tutors viewed their use of formative assessment as part of the way in which students develop their own professional identities. Students are given ownership of processes that took place in the university classroom in an endeavour to make them better prepared for their own school classrooms.

*"... So in that sense its formative assessment, which combines a sense of them generating their own evaluation, their own assessment, so it's formative assessment between us as experts, if you like in one guise, and them as fellow professionals in another guise."*[Nick]

Nick describes his desire to establish the students as a community of learners in which they use each other as a resource. Within the classroom, formative assessment is implicitly part of a culture of discovery. Students are inspired by tutors to adopt an enquiry approach. This is not necessarily an easy shift for some students, and the expectation that the teacher is the expert still seems quite prevalent. Initially, the rules in this community are quite upsetting for the students, and the influence of the tutors is vital in encouraging acceptance of this different approach. In this activity system (see figure 2 adapted from Engeström 1987), this plays out as a process of trying to move power back into the hands of the students, challenging them to think for themselves and subsequently become role models for their own students. There is a recognition from tutors that they want their students to have sustainable careers in the education sector, and in order to do this they must influence their own classroom culture.

*"They were taken aback one day when I wandered in and did the impersonation of the Dalek, just to make the point that Dalek teachers won't survive."*[Nick]

*"We could easily just turn out people who would meet all of the standards and everything would be fine, but whether they've got the interest and stamina to sustain a career which is intellectually stimulating for them over a long period of time..."*[Keith]

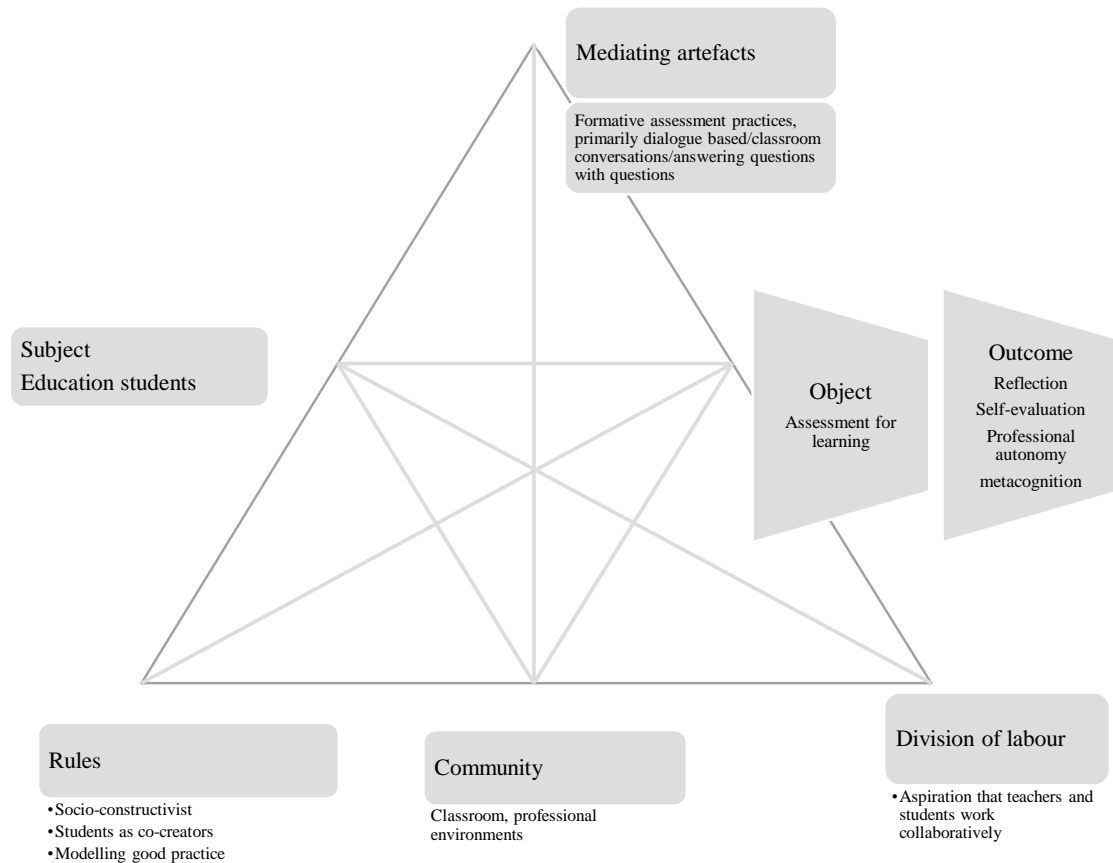


Figure 2. Formative Assessment as an Activity System in Education (adapted from Engeström 1987)

For the students in the education subject area, the rules are predominantly socio-constructivist in their application to teaching and learning, with a drive to inculcate learning with and from each other from the very beginning. Students are co-creators of knowledge, and the endeavour of the tutors is for the community to be inclusive of all. The role of the academic as expert, or not, is borne out by both Mathew and Nick, and reflects their desire to see students take responsibility for their own learning as early as possible in their careers.

*"You are continually thinking, how much do I tell you, how much do I let you find out? In a way, I've got a certain amount of knowledge, but I am certainly not the world's expert on any of the projects that they are doing. And yet I have the power, in a way, to mark their project as if I was."*[Mathew]

*"I am quite conscious of making them think, rather than providing the thinking for them. In some cases this goes down well and in others it goes down badly, because they feel they should be told."*[Nick]

Formative assessment is used as a process to encourage these students to understand that they all have something to contribute, and for the education students it seems to be implicit in establishing their own identities as part of a professional community.

*"They're not just following what they have been told to do, but they're actually investing in it themselves."*[Nick]

The culture is quite different in sport science, particularly in the early years, where it is very much a staff-led learning experience. There is the sense that tutors are the experts who tell the students what to do. While working with peers is encouraged, the description of activities is often predominantly about the tutors' assuming a responsibility to ensure students meet their learning outcomes. Chris describes what one of his students might say about what they are asked to do.

*Chris asked me to produce a graph. I've done that and he's put a graph up in his next lecture, and mine looks exactly the same as his. I have got the units correct and I've labelled it correctly.*

By encouraging students to work together to complete quizzes designed to check understanding, peers are used as sources of influence in formative activities, and also through using each other as a reference point for personal progress. The culture here is implicitly influenced by a behaviourist approach, particularly in the first year. Although peers are a source of influence, these activities fit with what Torrance and Pryor (2001) would describe as convergent assessment, teacher-led processes where tasks are focused on achieving correct responses. They are described more as a continuous summative assessment approach than something that is formative.

### **Mediating Artefacts**

What tools were used in these activity systems, and why were they chosen? For Mathew, while he might use a quiz in the virtual learning environment that can be taken repeatedly, for what he calls the "do I know this stuff?" His overall desire is to promote the holistic nature of the present day pharmacy profession to develop concepts and understanding.

*"The central part of the role is being there, understanding medicines, helping people understand their medicines, not supplying them."*[Mathew]

Mathew's view is that, used strategically across the three years, formative tools need to be used in different ways, initially for answering questions, and latterly for creating signposts that assist students to become autonomous learners. In particular, he emphasises the role of dialogue as a tool in the formative process, identifying the role of conversation with students in particular.

*"I think we don't do terribly much formative assessment – I think we do a reasonable amount of formative help, which as I say I think it's probably... hopefully, the end result is similar, but it's just not as formalised, as it were."*[Mathew]

Dialogue would appear to be the predominant tool in use in education, whether this is through dialogue in class, consisting of challenging students with questions, or through one-to-one dialogue, as Keith describes when conducting peer observation of a student in their own classroom.

*They get notes and they get in-depth discussion of what I saw in the lesson, which invariably starts with me asking them 'what do you want to tell me about that lesson?'*

Dialogue is primarily used as a provocation for education students, its purpose to specifically make students think and take ownership of their own learning. This was influenced by the desire to stimulate learning in a discovery paradigm, rather than as something fixed and rigid. The education tutors did report using tools, other than dialogue, both to assist and simultaneously challenge the students, but often in what they seem to feel were ways that might be outside accepted academic practice. In this example, Alan describes a portfolio the students created over time.

*I hesitate to say... but it's almost a non-academic form, it's not the standard academic form of writing... the students really appreciate the chance to operate in a slightly freer structure.*

Collectively, as a group of tutors, it appears that the rules of their activity system influenced how tools are used and how they felt it would affect the expected outcomes and their expectations of their students.

Chris in sport describes the overall aim of the assessments in his course as ensuring students have the knowledge, understanding and ability to communicate, and that this is tested through both theoretical and practical assessments. His formative tools include direct study (homework), quizzes used extensively throughout first year in particular, tutorials and presentations with associated dissertations concentrated at third year. All the tools would seem primarily to be situated within a culture that is about individuality, rather than learning in a collaborative environment. Verbal feedback was used specifically associated with formal student presentations, but it could not really be described as a dialogic process, as it is in Education.

A particular tension exists for the sports science tutors, influencing how formative assessment opportunities are developed, and this is the large number of students impacting on staff student ratios, with the resulting challenge of workload. Thus, while a willingness and understanding of the value of improving student learning in this way is apparent, time is felt to be a major hurdle.

*"Staff may well say, well, I need to have my module taught in this way, and you say, well ok, but you're still getting the same amount of workload for it, you're not getting double the workload."*[Chris]

Quizzes are identified as providing a solution that, although they require front-loading in terms of time, once set up, they run themselves. The perceived identity of the academic leads to the second tension for this activity system. Some see themselves primarily as facilitators of learning more so than researchers, for others, research is their primary focus, and so a willingness to commit to invest time in this type of pedagogic practice is limited.

The key differences between sport and the professional courses of pharmacy and education is a reduced emphasis on students working collaboratively in a community. While similar tools are used, it is in an environment with different sets of rules and different relationships between tutors and students, between students and other students. In addition, there is less emphasis on formative activities that promote autonomy in learning and self evaluation skills. Where it is encouraged in sport, Chris admits that the students struggle.

*"I think it's that bridge that they seem to find it hard to get across, between what they've learned, and actually there are a lot of skills attached to that, and what they need from a vocational and career perspective."*[Chris]

This type of learning is challenging to students when it is not an embedded part of the culture of a programme of study appearing as a one off activity as opposed to be a key element of the pedagogy as in the subjects of pharmacy and education. In part this may be influenced by the vocational nature of pharmacy and education, courses which will inevitably include an emphasis on ongoing professional development.

It should be said that all the academics interviewed for this study were passionate in their own ways about enhancing the student learning experiences. For all of them, it appears that the constructions

of those experiences are what they believe to be the best way to achieve student learning within the constraints placed upon them. Reflecting on these three different formative assessment activity systems overall, what takes place appears to be influenced implicitly by individual personal concepts of student learning in higher education.

### Discussion

This study is not meant to argue for any particular view about formative assessment, but rather to demonstrate how CHAT can be a useful reflective framework to analyse and understand the complexity of formative assessment practices within different subjects. It recognizes that those practices may be specific to a particular institutional context, rather than being accepted as representative of a wider view. However, it does demonstrate how CHAT can be used as a thinking tool in consideration of pedagogy in practice, and how personal pedagogical stances influence student learning. The pedagogical stance of these academics appears to be justified not so much through a theoretical view, but one that considers students' needs from a more practical perspective, and especially for education and pharmacy, where the professional outcomes for these students are very clearly defined. Trigwell's (2003) relational model of ways of experiencing teaching, suggests that teachers use student focused approaches where teaching centres on changing students' conceptions of what is to be learnt. For some of the participants in this study, dialogue is a key element of that approach. Their dialogic process is something that is collaborative and not linked primarily to the teacher goals, nor is it dominated by the teacher holding all the power in the interaction (Lyle, 2008). Lyle (2008:205) suggests that 'dialogism assumes knowledge is something that people do together rather than as an individual possession'. It constitutes a process where both the teacher and the student move closer to the object of study, opening both to new potential understanding (Shor & Freire, 1987). Particularly within the context of the education participants, dialogue is used to create what Bohm (2004:6) describes as a 'stream of meaning flowing among and through us and between us...and is the glue or cement that holds people and societies together'. It is argued that courses need to be designed that take account of feedback as a dialogic process, whether that be teacher to student or peer to peer and that it must lead to students actively doing something with the feedback that they have received from an external source (Nicol, 2010). Subsequent internal processes should mean that students are able to make judgements about their own learning and to become more self-evaluative. Dialogue as linked to formative assessment therefore promotes greater cognitive gains for students' learning, and independent self-regulation (Lyle, 2008; Carless, Salter, Yang & Lam, 2011). Providing opportunities for dialogue in this way is imperative if higher education is to be successful in using assessment to do more than just correct errors (Price, et al., 2011).

Acknowledged as having the potential to subsequently influence students' abilities and preparedness for lifelong learning, the use of dialogical pedagogic practice seems to relate to academics' personal learning theories (Kreber, 2010). This relationship between theory and pedagogic practice will therefore have consequences on how dialogue is used as a formative assessment tool and this is illustrated in the experiences of the participants in this study.

The challenge of formative assessment is that while there is a general recognition of the positive effect it has on students, the mismatch between elements of an activity system will add to the difficulty of ensuring that these formative assessment practices are used to good effect. Knight Tait and Yorke (2006:321) highlight reasons that may prevent an individual from sustaining changed pedagogic practice, including:

- will the people with whom they work tolerate it?
- can their departments' rules and norms accommodate it?

- are the tools or heuristics used to cast their generalised understanding of assessment into some practical shapes sufficient?
- does the division of labour in their departments give them positions from which they can operate?

In the examples in this study, those from education presented a unified approach, one that had creatively managed the expected ways of working within the professional rules. For Chris in sport there was much more of a struggle with the division of labour and with getting everyone on board, within his team, using his approach.

### Conclusion

CHAT demonstrates the influence of both cultural and historical influences on assessment practice in general. Internationally these include growing numbers of students, competing resource demands, less staff and more administration. Additionally assessment practices continue to be dominated by the focus on summative assessment and associated regulatory frameworks (Boud, 2007). These pressures reduce the time and opportunities for staff to develop the relational aspects of knowing students, identified as being key to successful learning (Brougham & Grantham, 2012), and to create space to try out new formative learning opportunities, let alone to consider the influence of pedagogy and theory on their practice.

It is known that many teachers in higher education find it difficult to articulate their philosophies of teaching and learning and it is debatable how theory influences choices in the design of classroom and assessment activities. If students are to become autonomous learners then our theories of pedagogy should encourage appropriate rules of engagement, tools and ways of being, that achieve this as an intended outcome. Awareness of theory can challenge thinking, and using CHAT can provide a reflective tool to analyse the tensions that may limit effectiveness of pedagogic practices such as formative assessment. This can be valuable from a research perspective, as in this paper, and by providing a tool that can be used to help individuals develop as reflective practitioners. Using CHAT in a review of curriculum design at a micro and macro level has the potential to enhance the pedagogical alignment of assessment practices with the intended outcomes of programmes of study. It is recommended that future qualitative research might usefully focus on the effectiveness of implementing CHAT as a reflective tool for designing the curriculum. This would include investigating the responses of teachers in higher education as to the value of CHAT in making personal pedagogic theory explicit, and how in doing so, this might subsequently influence classroom practice. An additional dimension to such research would be to include the views of students using the same framework to compare and contrast responses. This would demonstrate whether or not the intended outcomes of learning opportunities in their subject, and the processes of achieving those outcomes, are viewed in the same way by students.

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