Formative assessment and motivation: Theories and themes

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The crisis of ineffective learning interactions in schools was expressed in 1998 by Black and William: ‘in terms of systems engineering, present policies in many countries seem to treat the classroom as a black box’. Since that time many nations have adopted formative assessment as a key strategy for improving classroom instruction and student engagement. The ‘black box’ is an object of criticism because it functions primarily as a receptive system where certain inputs from the outside such as standards and tests with high stakes are fed into the box. It is now widely understood that such learning environments reduce the opportunity for meaningful learning interactions inside the classroom and diminish the motivation to learn among students. This article assumes an international perspective, examining the theory of self-determination (SDT) and various socio-cultural theories on motivation and how they intersect with formative assessments.

Key words: formative assessment, motivation, self-determination, learning interactions, socio-psychological and socio-cultural theories

INTRODUCTION

Formative assessment: evidence, interpretation and adaptation

A strategy for improvement which links curriculum, instruction and assessment is best known in the US as ‘formative assessment’ (hereafter FA) and is ‘now recognized as one of the most powerful ways to enhance student motivation and achievement’ (Cauley and McMillan, 2010). The theoretical ideal of FA is for students to develop the capacity to gather evidence of their own learning, which they then interpret and use to plan the next steps of the learning process. The positive impact of classroom practices which encourage autonomous regulation upon motivation and self esteem has been emphasised by international research groups, such as Cambridge University’s Assessment Reform Group (ARG, 1999) and the work of the Organization for Economic Cooperation and Development (OECD, 2005). Arising from the work of Black and William (1998a; 1998b) and the ARG (1999) the FA process is founded upon eight strategic principles that demand high-quality interactions among students. High-quality interactions are characterized by equality, mutuality and reciprocity (for example, Damon and Phelps, 1989; Askew, 2000). The principles which appear here are derived from a number of coordinated sources (for example, ARG, 1999; Black and William, 1998a, 1998b; Crooks, 1988; Stiggins 2007; Assessment Action Group /AIFL Programme Management Group [AAG/APMG], 2002-2008; OECD, 2005). Students must collaborate with teachers and parents/carers in order to:

• be able to understand clearly what they are trying to learn, and what is expected of them;
• be given immediate feedback about the quality of their work and what they can do to make it better;
• be given advice about how to sustain improvement;
• be fully involved in deciding what needs to be done next
• be aware of who can give them help if they need it and have full access to such help;
• be able to build knowledge of themselves as learners, and become meta-cognitive;
• take more responsibility for their learning and participate more in the process of learning.

The final key principle is to engage parents and carers in the learning process. The importance of parental or carer inclusion was confirmed by Townsend (1997), who found
that effective schools were those that welcomed parents by engaging them and involving them in the widest range of school activities, most crucially those concerning their child’s development.

FA then is a strategic process which uses evidence regarding the extent of student knowledge (declarative knowledge) and skill (procedural knowledge) to support further learning and as such increases student motivation and engagement (Cauley and McMillan, 2010). The purpose of classroom assessment is therefore to provide practitioners, administrators and policy makers with classroom-level data for improving teaching methods and for guiding and motivating students to be actively involved in their own learning. Assessments should help students ‘become more effective, self-assessing, self-directed learners’ (Angelo and Cross 1993, p.4). Socio-cultural perspectives on the motivation to learn (e.g. McCaslin, 2004) confirm the validity of FA as a strategic framework which has the capacity to improve student motivation. There is a consensus in social theories on motivation over the importance of: i) self-directed learning; ii) the impact of classroom instructional strategies on student learning; iii) the influences of parental beliefs and behavior and iv) the influence of peers. Socio-cultural research on motivation is aligned with the strategic FA framework because it too blends ‘ongoing social influences in emergent interaction with personal development’ (McCaslin, 2004 p. 250).

**Theoretical Emphases: An overview**

FA blends cognition and social interaction into a functional theoretical framework by situating individual cognitive development in a context of collective classroom activity. FA therefore draws theoretical vitality from cognitive theory and from a variety of socio-cultural theories arising from the work of the Soviet theorist L.S. Vygotsky (1896–1934). After extensive consultation and revision the Formative Assessment for Teachers and Students (FAST) group provided the description of FA designed to be most accessible to US educators:

‘FA is a process used by teachers and students during instruction that provides feedback to adjust ongoing teaching and learning to improve students’ achievement of intended instructional outcomes’. (Popham, 2008).

McCaslin (2004) engages with identical concepts in the realm of motivation by assuming a socio-cultural perspective which, ‘locates and co-regulates human activity in the social realm rather than envisioning activity as a characteristic of the individual’ (p. 254). Drawing upon Vygotsky’s notion of ‘significant others’, McCaslin emphasizes the importance of opportunity, and how such opportunities to negotiate and reach for individual understandings are created by interpersonal contact and result in the acquisition of new cultural values which are internalized and can become meaningful as personal goals.

The procedural emphasis of FA is the adaptation of instruction to meet the needs of the student(s). The needs are both cognitive, in terms of supporting the acquisition of knowledge and also affective in terms of addressing what Ryan and Deci (2000) call, in their socio-psychological exploration of motivation ‘innate psychological needs’:

‘innate psychological needs that are the basis for their self-motivation and personality integration, as well as for the conditions that foster those positive processes’ (2000, p. 68).

Ryan and Deci’s ‘self-determination theory’ identifies three innate psychological needs, the need for:

i) competence;
ii) relatedness;
iii) autonomy.

Of most interest to proponents of FA is relatedness and autonomy. Indeed, in a key Organization for Economic Cooperation and Development (OECD) publication ‘Improving Learning in Secondary Classrooms’ (2005) the importance of learning-autonomy is given the significance emphasis in various international case-studies on FA. Our classrooms are lacking in a culture of cooperative interaction and do not recognize or effectively support the relatedness needs of students. Consequently they are places where students merely appear to be working as groups when in fact they are not (Black and Wiliam, 2005). However, research undertaken by the Assessment Action Group /AiFL Programme Management Group (AAG/APMG, 2002-2008) in the Scottish region of the U.K about FA found that pupils responded positively to co-operating with different people (that is, adults and peers) in their assessment. Of particular interest in the AAG/APMG research was the confirmation that they liked to help other people with their schoolwork, either while actually working and learning, or in terms of assessment. Ryan and Deci (2000) suggest that a secure relational based is important to the expression of intrinsic motivation to learn. In earlier research Ryan and Grolnick (1986) observed lower intrinsic motivation in students who perceived their teachers to be uncaring and apathetic to their needs. It is therefore unsurprising that the central pillar in the FA framework is effective dialogue among the central participants – the students, but it is crucial that the teacher remain engaged and supportive.

**Autonomy and self-esteem**

Autonomy is perhaps the ‘big idea’ behind FA - the theoretical ideal of FA is to develop fully autonomous learners, who can self-assess their work, make meaningful inferences from it and plan the next steps for further progress (Black and Wiliam, 1998a; 1998b; ARG, 1999). For autonomy to exist intrinsic learning goals must
be emphasized and external control reduced by providing supportive conditions in which emotional and psychological health is promoted so that learning takes place in a risk-free environment. In doing so, FA strategy draws from Deci and Ryan's emphasis on autonomy and the observation that intrinsic motivation persists only when fostered by an appropriate (classroom) climate. Socio-cultural perspectives on motivation depict groups of learners as 'learning communities' and quite naturally emphasize the importance of conditions, explicitly recognizing the power of teachers and parents/carers to facilitate the positive internalization of values and attitudes toward school work. So, autonomy is mediated by parents, teachers, and peers; a dynamic conceptualized as the 'zone of free movement' (ZFM) by Valsiner (1997), which describes the extent of choice extended to the student. Valsiner intertwines the ZFM with the 'zone of promoted action' (ZPA) a conceptual space in which parents/carers encourage children to engage with new activities that the expert considers important for their development. Autonomy is therefore encouraged by allowing students the freedom to set their own goals while guiding the student in how to shape those goals in a principled manner which meets the aims of the curriculum. Valsiner completes the conceptual framework by adding a modified notion of Vygotsky's zone of proximal development (ZPD) which contains all the possibilities for future development and as such is empirically inaccessible. A key aspect for emphasis regarding autonomy is that of peer interaction and how young learners either promote autonomy or exert control over each other as they learn together. For example the OECD (2005) present an FA case study from a Canadian school as they develop a program known as PROTIC which encourages autonomy by requiring students to 'identify learning aims within the framework provided' (p. 101). It can be seen that Valsiner's ZFM and ZPA are present in the PROTIC blueprint. In the PROTIC program, this process of guided goal-setting accelerates movement across the ZPD through a process of regular reflection (every 9 days), and the production of written reflection papers on their own learning, their team learning and the achievement of personal and program learning targets. Their papers then become records which they use to make future choices and analyze ways in which they might do things differently. The OECD reported that students found it initially difficult to deal with the level of autonomy ('ZFM') afforded to them, however after several projects students began to plan for their own learning effectively. The potential for students to become self-regulated learners has been supported by other international studies, for example in Scotland (Condie, Livingstone, and Seagraves, 2005).

**The social emergence of engagement**

Socio-culturalists hold that interest arises when cognitive (stored knowledge) and affective (internalized value) functioning meld together (Renninger, 2000; Pressick-Kilborn and Walker, 2000). Pressick-Kilborn and Walker (2000) explicitly address the social factors which may create interest in learning and present contrasting contexts in which interest may arise: situational interest and personal interest. Situational interest arises when interest is triggered by the environment and can be viewed as an internalized, transformed, and integrated social message that has penetrated the personal core of the self and which becomes externalized in various social contexts. For socio-cultural theorists it is clear that ‘the social world influences the development of interest’ (Pressick-Kilborn and Walker, 2000 p. 163). Alexander (1997) theorizes that situational interest may evolve into personal interest across time through repeated exposure and as knowledge about the issue or activity increase. Thus engagement is also modified by perceptions of self-competence, a notion also central to SDT. In ‘emergent interaction’ (EI) (Wertsch and Stone, 1985; McCaslin 2004) self-knowledge in negotiated through interpersonal engagement and meaningful opportunity with significant others such as parents, teachers, and peers.

Just as self-determination theory and EI examine the conditions that elicit and sustain intrinsic motivation, FA draws from socio-psychological and socio-cultural theories on social engagement and offers a practical framework which operates to engage students with the social process of learning. For example, in the Canadian OECD (2005) case-study positive interdependence (Johnson and Johnson, 1996) and relatedness (Ryan and Deci, 2000) is fostered in Math classes by compiling groups of five students who all exhibit different levels of expertise. As one student is reported as saying, ‘we always make sure to help and support each other in our learning’ (OECD, 2005, p. 101). A school in Denmark took this further and brought together students from 8th, 9th, and 10th grades as a part of their whole school initiative called ‘Moving toward a Project Oriented School’ (OECD, 2005 p. 119). In the Canadian school engagement (and autonomy) is furthered by the use of portfolios, which teachers regularly assess and provide comments only feedback on the quality of the work.

**Motivation and classroom climate**

A key catalyst for motivation contiguous with social engagement is that of classroom climate. It is clear that in creating a supportive environment in which all contributions are valued students will feel empowered to contribute in a positive and productive way both inside and outside the school. Of particular importance to understanding the conditions that foster positive social processes is McMaslin’s elaboration upon Wertsch and Stone’s (1985) ‘emergent interaction’. McCasiin writes, ‘in this perspective internalization is inherently social; it blurs the distinction between self and other’ (p. 259). Both Ryan and Deci’s self-determination theory and emergent interaction (EI) theory focus upon the internalization of values as the process from which motivation to act
arises. McCaslin’s position is similar to that of Goos, Galbraith and Renshaw’s (2002) who applied the term ‘collaborative zone of proximal development’ to their research into mathematics education, which explains the internalization of knowledge as a process of scaffolding ‘involving mutual adjustment and appropriation of ideas’ (p. 195). Pressick-Kilborn and Walker (2002) suggest that learning relationships characterized by equality and mutuality stimulate interest in the task and promote sustained on-task interactions. This view was expressed in the earlier work of Damon and Phelps (1989) who also highlighted equality and mutuality as critical dimensions for effective collaborative learning. It appears clear that for socio-culturalists mutuality is a critical feature and one which must exist if the classroom climate is to support learning and is a key feature of the model for action research presented later in this paper.

Unfortunately, such awareness is not widely exhibited by policy makers. Consequently, many resources are deployed to the prevailing policy - assessment of learning - that there are no resources left to train teachers on how to undertake the FA strategies which meet the social and psychological needs of the students (Stiggins 2004). Stiggins, in an interview with the US National Staff Development Council observes:

‘The key is to understand the relationship between assessment and student motivation. In the past, we built assessment systems to help us dole out rewards and punishment. And while that can work sometimes, it causes a lot of students to see themselves as failures. If that goes on long enough, they lose confidence and stop trying’ (1999, p. 12).

The practical in-service effect of FA is that students keep learning and remain confident that they can continue to learn at productive levels if they keep trying to learn. Stiggins (2005) observes that student use information from assessments when determining the strength of their engagement with the process of learning, or indeed whether to continue trying at all. In other words, students who internalize the values found in an FA classroom are much less likely to experience downward-spiraling motivation problems and disaffection which leads to withdrawal of effort, poor achievement and discipline. Of interest are two separate research papers which evaluated the crucial development stages of FA (2002-2004) in Scottish schools. The first was conducted by Hallam, Kiston, Peffers, Robertson and Stobart (2004) and later by Condie, et al (2005). Hallam et al (2004) found strong positive consensus among teachers (n=72) regarding enhanced involvement, motivation and confidence in their students. Condie et al (2005) used questionnaires as a part of their method and issued the same basic template in two phases spaced 16 months apart. 44 teachers and 21 head-teachers participated in phase 1; 56 teachers and 26 head-teachers participated in phase 2 of the survey. The responses to the Condie et al questionnaire concur with the favorable indications received by Hallam et al., (2004) regarding learning, confidence and motivation (see Table 1).

McCroskey and Richmond (1992) remark that discipline problems, ‘…are merely symptomatic of the cause and achieving a productive and relatively stress-free learning environment involves more than controlling student misbehavior effectively. All aspects of what happens in the classroom are contingent upon eliciting cooperation from every class member,’ (p. 44). The term ‘management’ in a FA classroom context takes on a unique meaning because it entails the effective management of the learning process by developing activities which support learning through high quality interaction such as, discussion, feedback and goal setting. Such strategies create a classroom climate of low-control and high-autonomy, which in turn catalyzes greater intrinsic motivation, curiosity, and desire for challenge (for example Deci, Nezleck and Sheinman; 1981). McCaslin (2004), in similar fashion highlights teacher management strategies as crucial to the learning of socio-cultural roles and the more general rules of responsible behavior. Formative assessment strategies support productive social behavior because the learning environment is one of mutually supportive interaction and positive interdependence among students (Johnson & Johnson, 1996).

Advancements in practice do not come easily. Many teachers take more than one year to engage with the idea of classroom dialogue because it requires ‘a radical change in teaching style from many teachers…it is this aspect of formative assessment work that teachers are least likely to implement successfully’ (Black and Wiliam, 2006a p.14). However, after reflecting upon the work

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<th>Table 1: Self-esteem; motivation and involvement</th>
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<tr>
<td>The developments enhance the learning of all pupils</td>
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<tr>
<td>Pupils have increased confidence and show greater self-esteem</td>
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<td>Pupils are more motivated toward learning</td>
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<td>Pupils have become more actively involved in the learning process</td>
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(SA/A = Strongly agree/agree) Clark, 2010a
undertaken together with teachers in the UK and US to implement cooperative practices, it was noted, ‘the involvement of students both in whole-dialogue and in peer group discussions, all with a change in classroom culture...was creating a richer community of learners, where the social learning of the students was becoming more salient and effective’ (Black and Wiliam, 2006a, p. 17).

**Cooperation, excitement and confidence**

The inalienable fact, as Ryan and Deci (2000) put it is ‘motivation produces’ (p. 69), yet it is that which drives our motivation to take action that is the essential focus of analysis. Ryan and Deci parallel authentic motivation with intrinsic motivation and note that people moved by such factors ‘have more interest, excitement and confidence’ (p. 69) than people who are externally controlled. Cooperative learning groups foster self-determination and the intrinsic regulation of learning behavior because they are characterized by positive interdependence, individual accountability, face-to-face promotive interaction, the appropriate use of interpersonal and small-group skills, and group processing. Cooperative learning groups support relatedness and consequently act as powerful catalysts for higher achievement, more positive relationships among students, and greater psychological health (Johnson and Johnson 1996, Ryan and Deci, 2000).

The strategic principles which underpin FA implicitly recognize Deci and Ryan’s (2000) assertion that relatedness, competence and autonomy are, ‘essential for facilitating optimal functioning of the natural propensities for growth and integration, as well as for constructive social development and personal well-being’ (p. 68). The reciprocal causality between the psychological needs of students and their subsequent motivation to learn has had little impact on the culture of measurement and testing which to dominates the agenda and continues to undermine the psychological health of many students. To focus our learning systems on ever more effective, valid and reliable methods of gathering assessment data is of course important yet to focus solely upon it is to reinforce the undesirable dominance of our current assessment systems. We are obsessed with the mistaken belief that the course to school improvement is better navigated by using more frequent, and more intense standardized testing. Consequently large numbers of students are at risk of psychological harm, a risk created by the extrinsic, high-control classrooms, in which even questioning styles can be termed ‘synchronous summative’.

**Applying Ryan and Deci’s socio-cognitive model**

The level of external control is a key aspect of FA in terms of reducing its negative impact and is also the central concept of self-determination theory in seeking to understand the extent to which individuals: a) internalize (‘take-in’) an external value and b) integrate a value so that regulation emanates from their sense of self (Deci and Ryan, 2000). For Deci and Ryan external motivation is a continuum along which the student’s self-determination increases as the level of external regulation (the various inputs into the ‘black box’) decreases (see Figure 1).

For many students, compulsory education will never be more than ‘autonomous extrinsic’ or what Ryan and Deci describe as a ‘somewhat internal’ experience. While this is not an ideal intrinsic state it does suggest that students who exhibit this type of regulation have greater autonomous control over their own actions and that teaching practice which encourages students to consciously accept and value the process of learning is an effective starting point for the development of more authentic types of intrinsic regulation by deploying teaching strategies which support relatedness and autonomy. McCaslin (2004) provides an instance of

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**Figure 1:** A model of self-determined learning  
Lonsdale, Hodge, and Rose 2009

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<th>Amotivation</th>
<th>Controlled Extrinsic Motivation</th>
<th>Autonomous Extrinsic Motivation</th>
<th>Intrinsic Motivation</th>
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<td>Low self-determination</td>
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home-life in which a young student’s motivation to complete homework is driven by the values of his parents and their wish for a better life. As such the young student is motivated to do his homework in the hope of a better material existence. Applying this scenario to Deci and Ryan’s continuum, the young learner may be placed as ‘introjected regulation’ because he may feel guilt if he did not complete the homework, feeling that he has ‘betrayed’ his parents values, or alternatively the student could be exhibiting a more intrinsic form of regulation depending on the extent to which his parents values have been internalized and are personally meaningful. The depth of internalization, argue socio-culturalists is dependent on the opportunity for and quality of interpersonal interaction.

The role of curriculum
The curriculum architecture has an important role in fostering more authentic forms of student regulation. The principles of engagement and motivation are contiguous with those of personalization and choice, and are highly significant features of an effective curriculum. Ryan and Deci (1985) observe that choice, acknowledgement of feelings, and opportunities for self-direction enhance intrinsic motivation because they allow people a greater feeling of autonomy. The arrangements for assessment should therefore be responsive to individual needs and support particular aptitudes and talents in order to challenge and motivate all learners to develop to their fullest. The curriculum should recognize that learners progress in different ways and, based on their experiences go on to make different choices. Assessment should reflect these differences by giving each child increasing opportunities for exercising responsible personal choice as they move through their school career. Once they have achieved suitable levels of attainment across a wide range of areas of learning the choice should become as open as possible. There should be safeguards to ensure that choices are soundly based and lead to successful outcomes. The effectiveness of such safeguards is dependent on the ability of individual teachers to understand the principles of assessment for learning and apply them in the classroom in order to support the fullest development of learners, while minimizing distortions in learning (AAG/APMG, 2002-2008). The notion of personalization and choice is by no means new. For more than 30 years researchers have been aware that relating new knowledge to learners’ existing understandings of the world is an effective way for learners to acquire deeper meaning from new information. Since personalization of the curriculum emerged as a valid pedagogical principle, it has been discussed as a means of motivating learners by incorporating their goals and choice of topics into a curriculum, particularly for addressing values (Howe and Howe, 1975), and as a model of behavior modification for disruptive students (Mamchak and Mamchak, 1976).

Some 35 years later the FA classroom system seeks to fully value and recognize learners’ achievements by acknowledging the individuality of personal experience and the accommodation of learners’ needs in the instruction. As such FA is a robust composite of motivational theory because it brings into existence a curriculum architecture which explicitly recognizes that individuals participate in multiple communities of practice (Lave and Wenger, 1991) and that the values of one community may conflict with those of another, potentially inhibiting positive learning behaviors (Pressick-Kilborn and Walker, 2000).

Learner and teacher perspectives on personalization and choice may be summarized as follows:

Learner: I am involved in planning my learning and setting challenging goals for myself. Assessment information helps me to see how far I have come and what I need to do to achieve my goals and motivates me to set new goals. I am assessed in ways that allow me to demonstrate and recognise the full range of my achievements. Where appropriate, I am involved in decisions about when and how this assessment will take place.

Teacher: The learning, teaching and assessment activities I plan create opportunities for dialogue to help learners set and achieve challenging goals based on high quality feedback on their progress. In planning teaching and assessment, I consider the needs of the wide needs of learners. I plan an appropriate range of activities to give learners the opportunity to demonstrate their learning and provide feedback accordingly. (Clark, 2010a).

The centrality of high-quality interactions
The process of feedback is the starting point for FA. Yet, not all feedback is formative and therefore not all feedback is effective. From a cognitive aspect FA provides feedback which closes the gap between a learner’s current status and the desired learning goal. It also intersects with Ryan and Deci’s perspectives on feedback. FA, like Ryan and Deci, posits that feedback should be effectance-promoting and free from demeaning evaluations. Deci (1975) found that negative performance feedback diminished intrinsic motivation, a fact reflected in the FA classroom where misconceptions are welcomed as opportunities for learning and public comparisons are discouraged.

Ryan and Deci (2000) ask the critical question:

‘Given the significance of internalization for personal experience and behavioral outcomes, the critical issue becomes how to promote autonomous regulation for extrinsically motivated behaviors. That is, what are the social conditions that nurture versus inhibit internalization and integration?’
The quality of dialogue between students, while central to effective learning must be supported by the discursive strategies of their teachers. A key FA strategy is the sharing of learning objectives with learners, an aspect also given the significance of emphasis in their research on mathematics education by Turner, Warzon and Christensen (2010, p.5) who highlight the oft heard student query: ‘Why do we have to learn this?’ Turner et al bring meaning to the process by sharing the goals of the lesson with students. As such they are being given feedback which facilitates the internalization of the values of the curriculum. Ryan and Deci (2000) emphasize the ‘that relatedness, the need for belongingness and connectedness with others, is centrally important for internalization’ (p.73). Further Deci and Ryan’s perspectives on the integration of extrinsic motivation intersect with the strategic aims of a FA curriculum and classroom when they observe that autonomy is ‘facilitated by a sense of choice, volition, and freedom from excessive external pressure towards behaving or thinking in a certain way’ (p. 74). As Deci and Ryan point out there are social conditions which inhibit internalization, a fact that socio-culturalists also understand well. Co-regulation of the zone of proximal development (ZPD) is not by definition a positive experience (McCaslin, 2004). The peer-interaction presented above characterizes the least effective style of interaction as ‘competitive’ which has a model-dependent meaning as being low in both mutuality and equality which (even in the absence of empirical demonstration) we would predict to diminish motivation to learn.

**Developing the drive to achieve**

To develop the drive to achieve, students need to believe that achievement is possible which means that early opportunities for success should be provided (American Psychological Association 1992, Forsyth and McMillan, 1991). It is then crucial to strongly attach academic success to moderate effort (Cauley and McMillan, 2010). Vansteenkiste, Simons, Lens, Sheldon and Deci (2004) in their field experiments with high-school and college level students found that the variables of effort and autonomy are very highly correlated with each other. This suggests that attributing academic attainment to effort is a crucial feature of classrooms which are autonomy supportive. This finding is confirmed by Dweck (2007) who found that, praising students for their effort encourages a growth mind-set by boosting their confidence in their ability to grow and learn.

In FA students are informed of the learning goals in terms that they understand from the very beginning of the teaching and learning process. It is unrealistic to expect them to simply know how success may be achieved – as already noted unrealistic expectations cause fundamental motivational issues, and this particular ‘oversight’ causes them from the very outset.

Independent learning can take place in conditions where the students know not only the purpose of each activity but also the assessment criteria, in advance. Confident and independent learning can be promoted by reassuring students that they can do well on the course, discussing the criteria and distributing prepared checklists and exemplars which clearly illustrate what success looks like (Cauley and McMillan, 2010). Students are then more able to self and peer-assess and can remind themselves of the success criteria by simply referring to the checklists prepared to support their learning (AAG/APMG, 2002-2008). When they are clear about these, children achieve more, through paying attention to the key aspects required. The objective is to create an environment that is student lead rather than one which requires micro-management because the students exhibit an unwillingness to learn or claim forgetfulness of their learning activities. Students who internalize the values found in an FA classroom assess their work and receive the benefits associated with the improvement of their own work before they turn it in (Cauley and McMillan, 2010; Bruce, 2001). The AAG/APMG found that students were more criteria aware and focused on success. In addition motivation and engagement improved as they felt that they were able to achieve the realistic targets. Teachers should create a productive and supportive learning environment both implicitly by using the checklists and explicitly by using appropriate discourse in the classroom (Tiberius 1990). Students can develop a deeper understanding of their learning when they are given opportunities to discuss the learning process with their teacher and their peers (AAG/APMG, 2002-2008). Students’ are greatly supported in this fundamental aspect of FA by the reduction of teacher/student asymmetry and the promotion of mutuality (McCaslin, 2004; Goos et al, 2002; Damon and Phelps, 1989) in the classroom atmosphere. In a cooperative classroom it is important that the teacher consciously avoids messages that reinforce positional power or those that emphasize extrinsic rewards and sanctions. Instead of using questioning techniques which demand obedience, such as ‘I require’, ‘you must’, or ‘you should’, more open discourse such as ‘I think you will find...’or ‘I will be interested in your reaction to,’ are more applicable (Johnson and Johnson 1996, Lowman 1990). More open-questioning techniques may be adopted that help students to explore the parameters of their own understanding. If such questions are put to a whole class group coupled with a no-hand up policy the increased scope afforded to the students requires that they are given a substantive amount of time to answer. A longer wait time than the usual 3-4 seconds before accepting responses encourage extended responses, and promotes deeper thinking and learning. While there is significant evidence to suggest extended thinking times promote deep-processing among students, it is particularly challenging for teachers who are required to stand and wait for students to respond (Black and Wiliam,
It should be clear that FA lessons are necessarily less prescriptive and consequently the students are active participants in the co-construction of the learning process. Students may be encouraged to engage with an activity by writing the issue on the board as a question and then using cooperative learning groups to discuss how the answer may be found (AAG/APMG, 2002-2008). Participating teachers who attempted a no-hands up policy reported mixed results, stating that its success depended on the students understanding that they would be asked a question at some point but not in every lesson. Questions were put to the whole class and then students chosen. In this way all the students were encouraged to take part in the lesson and it was made clear that all responses were valued, both correct and incorrect. Student involvement was further facilitated when the teacher asked them to vote for the correct answer from a variety of possible answers.

Positive learning environments: Emphasizing process over performance
There is a wealth of research which strongly suggests that a focus on performance outcomes (grades) accentuated by high-stakes testing environments is detrimental to student motivation (Covington, 1992; ARG, 1999; Harlen and Deakin Crick, 2003; Harlen 2006, Ryan and Deci, 2002a). Teachers who emphasize performance routinely make evaluations of student achievement public. This kind of feedback practice draws on an aspect of behaviorist theory expounded by Chase and Watson (2004) who study feedback as social consequences: ‘consequences within a behavioral system are defined as reinforcing if they increase the behavior that they follow,’ (p. 149). While the intended consequence of making evaluations public is to make students work harder/do better, it is the antithesis of formative feedback, not only because it is a potentially negative experience but because students are not given advice or help on how to improve their work. Such feedback may be described as potentially demeaning and therefore acts to diminish intrinsic motivation (Deci,1975). At best therefore it exists at the left-hand side of Deci and Ryan’s (2000) self – determination continuum because it focuses on rewards and punishments arising from social judgments designed to reinforce certain learning behaviors.

When confronted with poor grades, ability-focused students often attribute their poor performance to their ability which they believe to be fixed and unaffected by the level of effort they invest in their studies (Dweck, 2007). This perpetuates a performance goal orientation and creates large numbers of disaffected students, particularly among lower achieving students. As with all systemic phenomena the outcomes are cyclical and reinforcing. Those students who exhibit disaffection often experience an ever-deepening spiral of self-defeating learning behavior and worsening motivational problems (Covington, 1992). This negative impact of current practice has been well documented. Both the ARG (1999) and the University of London’s EPPI-Centre (2002) conducted a systematic review of the impact of summative assessment and tests on students’ motivation for learning and found that students show high levels of test anxiety when facing summative tests and much prefer other forms of assessment. Studies on motivation point to the probability of a profoundly ironic situation in which the high-stakes testing environment created by the reauthorization of the 1965 Elementary and Secondary Education Act (ESEA) more commonly known as the No Child Left Behind Act (2002), works counter-productively to the realization of improved achievement. Zimmerman (2000) found that academic self-efficacy was more predictive of achievement than outcome expectancies (cited in, Alexander and Winne, 2006). Turner, Thorpe and Meyer (1998) remark that students of low self-efficacy and high performance goal orientation typically exhibit high levels of test anxiety and that such students do not rise to the expectations or meet the demands placed upon them by high-stakes tests. On the contrary, they divide their attention between worrying about their performance and thoughts about their negative characteristics. ‘As a result, anxiety influences memory and test performance in these students’ (Turner et al, 1998). Deci and Ryan (2000) emphasize the connection between environments that promote relatedness and are autonomy supportive and better psychological health. The connection between relatedness and psychological health is supported by the early research of the American psychiatrist H.S Sullivan (1953) who observed that interpersonal relationships support mental health. When students are liberated from the threat associated with extrinsic demands and place strong relative importance on intrinsic aspirations it was found to have a positive impact on well-being indicators ‘such as self-efficacy, self-actualization, and the inverse of depression and anxiety’ (Ryan and Deci, 2000). Socio-culturalists add the weight of their evidence on the importance of positive learning environments which may only exist where there is ‘co-regulation’ (McCaslin, 2004) and social relationships which scaffold a range of meaningful experiences for the individual student.

In professional evaluations of FA by participating Scottish teachers it was found that:

‘A major outcome...was the change in classroom practices which increased the active engagement of pupils, who were encouraged to take ownership of their learning rather than being the passive recipients of the delivery of curriculum’ (Hallam et al, 2004, ¶ 4.7.1).

Concluding summary
In noting that the passive reception of curriculum is an undesirable characterization of classroom learning it
speaks back to the critique of the ‘black box’ presented by Black and Wiliam (1998b) and the ARG (1999). In international contexts, such as Scotland (Hallam et al., 2004, ¶ 4.7.1) and various other nations (OECD, 2005) it was reported that the implementation of FA caused relationships with the students to blossom and it became possible to bring forward difficulties without negative impact. For example, Hallam’s study found that the students were generally positive about the impact of the project and Condie et al. (2005) requested that teachers evaluate the following statement: ‘Pupils themselves report positive views of project activities.’ Practitioner responses were relatively favorable, with 62.5% (in phase 1) and 65% (in phase 2) of teachers strongly agreeing or agreeing with the statement. Harrison (2009) reports from England on a 5-year study on the impact of FA on science attainment, ‘science exam results rose from below 40% A-C to more than 60%. Key Stage 3 results went up year on year, following a period of stagnation.’ (p. 8). A very significant effect of FA was a marked decrease in reluctance to participate in discussion and engage in activities. While the implementation of FA was found to be challenging by teachers they assumed a collaborative problem-solving approach, reporting numerous positive outcomes: ‘re-energised, satisfied, confident, renewed enjoyment’ (Condie et al., 2005, ¶ 4.4). Similarly, Harrison (2009) noted that ‘NQT (Newly Qualified Teacher) staff...all went on to receive ‘excellent’ OFSTED observations, and moved almost immediately from NQT status to middle management.’ (p. 8). It is evident that the students are not the sole beneficiary of a movement from a teacher-centered pedagogy to one which places the student and their learning needs at the heart of teaching. In closing, the 2005 OECD report which explored FA practices in nine nations found that teachers who practice FA consistently indicate that students are:

i) generally able to set realistic learning targets;
ii) more involved;
iii) better equipped to assess their own learning;
iv) positive about project activities;
v) more confident and
vi) more motivated.

REFERENCES


