

Implementing formative assessment: student teachers' experiences on placements

Elaine M. Cowan*

School of Education, University of Aberdeen, Scotland, UK

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Drawing on the principles of formative assessment identified by the Assessment Reform Group in England, Assessment is for Learning was a major Scottish initiative to improve children's learning. This paper surveys the implementation of formative assessment strategies during school placements by three cohorts of final-year Bachelor of Education students (BEd4) at one Scottish university. Also, use of formative assessment by one cohort of Professional Graduate Diploma in Education (Secondary) students at the university is compared with that of the most recent BEd4 cohort. Factors students identified that supported or inhibited implementation of formative assessment are reviewed. The importance of positive support on campus and placements is discussed.

Keywords: initial teacher education students; formative assessment; classroom strategies; support and barriers; survey

Introduction

Assessments and tests may be described as summative or formative. 'Summative assessment' reports on student achievement at a particular time and frequently bestows qualifications. It is sometimes described as 'assessment of learning' (Crooks 1988). Assessment is formative when, as part of normal teaching and learning, 'evidence is actually used to adapt the teaching to meet the needs' (Black and Wiliam 1998, 2). To improve, students must be able to monitor their own work as they produce it (Sadler 1989) and receive task-specific feedback (Crooks 1988). This feedback informs further learning and sets targets for the future. It is best described as assessment *for* learning. By developing learners' awareness of their own learning and encouraging application to different contexts, it can also said to be assessment *as* learning (<http://www.ltscotland.org.uk/assess>).

Any specific assessment may be used both summatively and formatively. By giving feedback on a unit test and sharing marking standards, teachers help learners to understand where they have done well and ways to improve in future. In England, the Task Group on Assessment and Testing stated that assessment 'should be an integral part of the education process, continually providing both "feedback" and "feed-forward"'. It therefore needs to be incorporated systematically into teaching strategies and practices at all levels' (Department of Education and Science/Welsh Office 1988, 4).

*Email: e.m.cowan@abdn.ac.uk

Teachers have been encouraged to review their practice to enhance children's learning (Black and Wiliam 1998; Assessment Reform Group 1999; Black et al. 2002) by focusing 'less on teaching and more on learning in the classroom' (Black et al. 2003, 81). In their King's-Medway-Oxfordshire Formative Assessment Project (KMOFAP), researchers worked with teachers to identify, implement and evaluate a range of learning strategies for enrichment of pupils' learning (Black et al. 2002). Using feedback to help children understand ways to improve current and future work was seen as crucial in this research, as were improving questioning and encouraging self-evaluation by pupils. The teachers identified improving questioning, feedback through marking, sharing the assessment criteria with learners and using pupil peer and self assessment as important. Later these teachers added the formative use of summative tests and increased 'wait or thinking time' and 'no hands up' as developments of interactive questioning (Figure 1). In British secondary schools for pupils aged 11+ to 18, summative assessment usually by external tests drives accountability but the KMOFAP research showed when teachers incorporated formative principles and used appropriate strategies in the classroom, children gained a better understanding of their own learning and performance improved (Black et al. 2003). The researchers noted that over the study period, classroom environments became increasingly collaborative and that focusing on 'formative assessment does not just add a few techniques here and there – it organises the whole teaching and learning venture around learning' (Black et al. 2003, 79). Black et al. (2006) emphasised the importance of using strategies 'which can be taught and can lead to pupils taking more responsibility for their learning' (126).

In Scotland, a review of assessment for children aged 3–14 (HM Inspectors of Education 1999) led to the Assessment is for Learning (AifL) initiative (Hutchinson and Hayward 2005). This linked to using assessment evidence in order to develop teachers' professional practice in gathering such evidence appropriately so they know how well children were learning; to share standards so teachers were confident in their

Key features	Related classroom strategies ^d
Students understand, recognise the desired standard and can compare their own work to it ^a	- Sharing the standard of a good performance - Sharing (developing) success/assessment criteria
Students receive specific feedback related to their needs ^b	'Two stars and a wish' (and other variants) to identify good work and set future targets
Students receive detailed feedback to overcome weaknesses in performance ^b	- Detailed written comments (not marks)
Encourage thoughtful dialogue between students and teachers ^c	- Formative use of summative tests - Interactive (often more open) questioning - Longer 'wait or thinking' time - 'No hands up' (all students prepared to answer)
Students develop skills and tactics they can draw on to modify their own work ^a	- Peer and self assessment - 'Traffic lighting'
Students share in the learning goals ^c	- Sharing learning intentions with pupils

^a Sadler (1989); ^b Crooks (1988); ^c Black and Wiliam (1998); ^d Black et al. (2002).

Figure 1. Formative assessment: key features and related classroom strategies.

1.	Support for Professional Practice through Formative Assessment
2.	Personal Learning Plans
3.	Support for Personal Learning Plans
4.	Gathering and Interpreting Evidence
5.	Local Moderation
6.	New National Assessments
7.	Assessment of Achievement Programme
8.	ICT Support for Assessment
9.	Reporting to Parents
10.	Meeting Needs of Pupils for Additional Support

Figure 2. The 10 projects within Scotland's Assessment is for Learning initiative.

judgements on assessments; and to monitor and evaluate the educational system. AifL initially consisted of 10 interlinked projects designed to inform and develop good practice in classrooms (Figure 2).

Project 1 supported professional practice through formative assessment. Funding allowed teachers time to read and engage with the principles of formative assessment. Teachers were encouraged to implement the principles of formative assessment through the classroom strategies that the KMOFAP research had linked to improvements in pupil performance (Black et al. 2003). The impact of the initiative for many participating teachers was to shift their classroom practice toward using formative assessment by first reading about the underlying principles, then adopting and evaluating some classroom strategies, resulting in reinvigorated practice (Hallam et al. 2004). Recent research on the initiative indicated that for primary children use of formative assessment was associated with measured improvements in self-esteem and self-competence (Miller and Lavin 2007). For children with negative views of their own ability at the start of that study, confidence and self-belief grew, especially for the highest and lowest 'attainers' and boys.

Formative assessment in initial teacher education

In Scotland, there are three main routes into the teaching profession: a four-year undergraduate Bachelor of Education (BEd) specialist degree, for teaching children aged 3–12 years in primary schools; a four-year first degree in a subject concurrent with studying for a teaching qualification for either primary or a secondary subject (for children aged 12–18); or the one-year post-degree programme for the Professional Graduate Diploma in Education leading to either a primary (PGDE P) or secondary (PGDE S) teaching qualification. Initial teacher education (ITE) ensures students understand theory and major policy developments and implement these in their practice (Wilson, Floden, and Ferrini-Mundy 2001). Furlong (2002) suggested academics have only limited opportunities in defining the inputs and outputs of teacher education because of rigid curricula and professional standards. The Standard for Initial Teacher Education (or SITE) might be seen as such a constraint. Benchmarks require students to demonstrate professional knowledge, skills and abilities before entry to their probation year. For example, students provide evidence of devising a supportive environment for learning; understanding and applying a range of assessment techniques to reinforce learning; using assessment results to evaluate and improve teaching, inform

planning and raise standards of attainment; and giving feedback in a positive and encouraging manner (Quality Assurance Agency for Higher Education 2000). These aspects of SITE all link well to formative assessment principles and the AifL initiative. On completing induction, probationers are evaluated against the Standard for Full Registration (SFR) (General Teaching Council for Scotland 2002). One benchmark within it requires assessment to promote and monitor learning integral to, but without dominating, the teaching process – another major principle of AifL.

Rather than limiting innovation, the Scottish Government and the General Teaching Council for Scotland (GTCS) have since 2005 supported teacher educators on ITE developments such as Scottish Teachers for a New Era (STNE) in the BEd (Livingston 2006) and Inclusive Practice (IP) in a new PGDE (Rouse 2007). The shared aim of these initiatives is that graduates will be better prepared to teach a wide range of learners, and more confident in their ability to evaluate evidence of children's learning on placements, probation and subsequently. During developments, lecturers questioned what should be included in ITE programmes to ensure the students benefited from current research, practice and policy. The AifL initiative, formative assessment principles and classroom strategies were seen as important – linking theory, policy and practice.

Mitchell (2006) reviewed formative assessment within her campus's ITE programmes. She recognised that 'aligning teacher education effectively with this particular policy is very significant' (198). Although students were involved in formative assessment experiences in courses, she found them under-prepared for employing it themselves by the end of ITE. Unpublished research (in Mitchell 2006) also suggested deep understanding of formative assessment principles had not always developed and classroom implementation was often superficial. In a small-scale study of PGDE (P) students at that university, Reid (2006) found students demonstrated understanding of formative assessment principles and implemented relevant strategies on placements.

Anecdotal evidence at the current site suggested some students had worked on placements in 2002–2003 with teachers involved in action research for AifL Project 1. To ensure all final-year BEd students (BEd4) were well prepared for such encounters, inputs on AifL and formative assessment were introduced in courses before final placements began in session 2003–2004. These included presentations by visiting teachers, a local authority assessment coordinator and university lecturers involved in the initiative nationally, on the principles of formative assessment and their implementation with pupils. Students were encouraged to read relevant literature (e.g. Black and Wiliam 1998; Clarke 2001; Black et al. 2002) and given access to the pilot website supporting AifL. During final placements, students were asked to implement pupil peer or self assessment and to discuss experiences with visiting tutors. Similar campus inputs were included in 2004–2005 and 2005–2006. Students were again encouraged to consider formative assessment in the classroom through follow-up readings and by reviewing teachers' case studies on the national website (<http://www.ltscotland.org.uk/assess>). A similar focus had taken place simultaneously within primary and secondary PGDE programmes. For secondary students (PGDE S), lectures, workshops and seminars were included in general and subject-specific campus courses. Students also focused on formative assessment in a major assignment reviewing theory and policy in relation to their own developing practice.

The current study examined the extent to which succeeding BEd4 student cohorts experimented with formative assessment on final placements during the development

of the AifL initiative. In 2006, it was extended to compare experiences of the BEd4 and PGDE (S) students in incorporating these principles and strategies into their practice.

Methodology and findings

Data sources

Data were derived from succeeding cohorts of students reviewing school placements in three academic sessions (2003–2004, 2004–2005 and 2005–2006) at one Scottish university. In June 2004, BEd4 students' final assignments were reviewed. In these, students reflected on goals for their BEd4 year; set targets for final placements; described action research undertaken on placement; and set goals for induction. To collect the data, a pro forma and coding system were devised and each student's assignment was then analysed. Assessment experiences on placements of 11 students were also reviewed during exit interviews with tutors. In 2005, the final assignment focused on evaluating progress toward the assessment benchmarks within SITE and SFR. Assignments were again coded and analysed. A brief survey on assessment was completed by students attending the final BEd4 lecture in May 2005. In May 2006, BEd4 students completed a slightly longer survey; four students were interviewed to review their formative assessment experiences; and in June PGDE (S) students were asked to complete a similar survey.

Table 1 summarises response rates for each cohort. Overall response rates were high. Approximately 33% of each cohort did not complete the surveys. Cross-referencing BEd4 assignment and survey data in 2005 indicated, as expected, that survey data from students attending the final lecture had slightly more positive views on formative assessment than the cohort's assignments. To identify differences between the cohorts, chi-square tests for independence (with Yates' correction) were initially employed. Fisher's Exact Test was used later to take account of small samples.

Comparison of BEd4 cohorts 2004 and 2005

In 2003–2004, AifL Project 1 was a small-scale pilot in the university's area. However, during the marking of BEd4 assignments, many students seemed to have focused on it on placement. After gathering data from the assignments, this was confirmed (Table 2). Over 70% of students had chosen to focus on formative assessment as a goal for their final placement. Interestingly, given students' anxieties in managing children's behaviour (Kyriacou and Stephens 1999), similar proportions of

Table 1. Response rates for each student cohort by data source.

Cohort and year	Assignments		Survey Responses	
	Sample/Total	%	Sample/Total	%
B Ed4 2003–4	84/86	98% ^e	n.a.	n.a.
B Ed4 2004–5	72/79	91% ^e	53/79	67%
B Ed4 2005–6	—	—	56/85	66%
PGDE S 2005–6	—	—	178/256	70%

^eNot including students with deferrals for the assignment (because of illness or failed school experience). There was no survey in 2004.

Table 2. Formative assessment in student assignments: BEd4 2004.

Elements within the Assignment	% Students
Target in BEd4 Year	71%
Topic for action research	35%
Target for final placement	34%
Goal for Induction Year	60%

students (35%) focused their action research on formative assessment as on classroom management. In reviewing progress, over 60% of students highlighted formative assessment as a main target for their upcoming induction year.

These students had already decided on their action research and placement targets before any course inputs on AifL or being asked to experiment with formative assessment. Equally, in 2004–2005 students were unaware their final assignment would focus on assessment until after setting placement targets. Drawing on data from assignments, Table 3 indicates just over 40% of students in 2004 stated they had focused on it. They were not required to evaluate this in the assignment criteria so it was not surprising that one quarter of students in 2004 did not review implementation. Some students indicated specific reasons for not doing so including lack of time, support from class teachers or confidence. More than two thirds of students experimented with more than one classroom strategy and 29% described sophisticated implementation combining several strategies, including sharing learning intentions and success criteria with their class; pupils' peer-assessing one another's work; the student teacher giving feedback; and setting targets for future learning with the pupil.

Progress nationally for the initiative was greater by 2005. More support was available before and during placements than previously. As expected, significantly more of

Table 3. Formative assessment strategies of BEd4: assignment data.

	BEd4 2004	BEd4 2005	Fisher's Exact Test
Classroom strategies	%	%	$p \leq$
None stated	23	0	.001
Sharing Learning Intentions	34	81	.001
Sharing Success Criteria	33	75	.001
Open Questioning	13	18	NS
– Thinking/Wait Time	4	14	.05
– No Hands Up	1	7	NS
Peer Assessment	41	85	.001
Self Assessment	42	82	.001
- Traffic lighting	4	28	.001
Other feedback ^f	22	94	.001
Several linked strategies	29	81	.001
$n=$	84	72	

^fIncluding, for example, detailed written feedback, next steps, targets.

Table 4. Supportive factors identified in BEd4 assignments.

	BEd4 2004	BEd4 2005	Fisher's Exact Test
Factors supporting formative assessment	%	%	$p^{\leq}$
Readings			
– Black & Wiliam and ARG	39	78	.001
– Shirley Clark's books	27	72	.001
LTS AifL website	2	43	.001
In-service on placement	8	25	.001
$n=$	84	72	

this cohort had experimented with classroom strategies on placement. Several were implemented by more than half the students and almost all mentioned giving some, if not always detailed, feedback to pupils. Significantly more of this later cohort (81%) had used a combination of the strategies highlighted above. Uptake was low for three strategies related to questioning techniques: open questioning, 'wait or thinking' time and 'no hands up'. These perhaps required more confidence to be implemented successfully so it was not surprising students seemed less willing to introduce them. However, in 2005 significantly more students had tried to use 'wait or thinking time' than in 2004.

Similar supportive factors were identified by both cohorts (Table 4) but in 2005 significantly more students followed up on the readings and the AifL website. Also, more students in 2005 said they had participated in relevant in-service on placement.

In assignments, students commented on the perceived value of these strategies, suggesting initial difficulty in understanding the theory. By persevering with pupil peer and self assessment, they stated children had been motivated to learn, as, for example, 'providing children with the opportunity of self evaluating their own progress allows a sense of ownership and purpose' and seemed to 'help pupils' learning and enhance attainment'. Some noted that developing pupils' assessment skills required practice for both teachers and pupils to be effective. Typical comments were, 'children do not learn to self and peer assess overnight; they develop confidence and ability over time and through direction from a competent model'. One student summed this up as 'not a quick fix ... needs to be thought out'. Only a few students stated these strategies detracted from time better devoted to other learning activities although 10% stated they took time or were a workload issue.

Both the 2005 and 2006 surveys asked BEd4 students about overall placement experiences with assessment (Table 5). Significantly more students in 2006 than in 2005 *strongly agreed* that they had implemented at least one strategy 'consistently' and 'confidently' during placement. A large majority of both cohorts stated their intention to employ such strategies within the induction year. No survey data in 2005 focused on the specific strategies.

Comparison: BEd4 and PGDE (S) students in 2006

Impressions derived from national meetings and tutors' school visits suggested probable differences in the extent to which formative assessment had been adopted and promoted in primary and secondary schools. To explore this, surveys including

Table 5. Formative assessment experiences: BEd4 surveys.

Assessment experiences	BEd4 2005	BEd4 2006	Fisher's Exact Test $p \leq$
	Strongly Agree %	Strongly Agree %	
School already using formative assessment	43	46	NS
School encouraged use of strategies	42	55	NS
Used 1 or more strategies <i>consistently</i>	49	73	.001
Used 1 or more strategies <i>confidently</i>	47	70	.05
Will use formative assessment in future	85	79	NS
$n=$	53	56	

many similar items were administered to both BEd4 and the PGDE (S) students in 2006. Statistically significant differences were evident between the two cohorts (Table 6). As expected, fewer PGDE (S) secondary students (30%) *strongly agreed* that schools were using formative assessment than BEd4 students (46%). Among the BEd4 students, 55% *strongly agreed* schools had encouraged using formative assessment and they themselves had implemented at least one strategy during placement 'consistently' (73%) and 'confidently' (70%). The picture for the PGDE (S) students was not so positive – significantly fewer *strongly agreed* their own implementation had been 'consistent' (47%) or 'confident' (44%). Realistically, this was to be expected – BEd4 students had already had three school placements within their degree and time to become comfortable in the classroom. In addition, their placements had coincided with phased developments for AifL nationally and locally. The PGDE (S) students on this intensive one-year programme, often immediately following completing their degree, had little current first-hand experience of schools. Even so, many students from both cohorts intended to continue with formative assessment into their induction year but significantly more BEd4 students stated this as their firm intention.

Table 6. Formative assessment experiences: BEd4 and PGDE(S) surveys 2006.

	BED4	PGDE (S)	Fisher's Exact Test $p \leq$
	Strongly Agree %	Strongly Agree %	
School using formative assessment in:			
– SE1	n.a.	21	n.a.
– SE2	n.a.	29	n.a.
– SE3	46 ^g	29	.05
School encouraged strategies' use	55	30	.001
Used 1 or more strategies <i>consistently</i>	73	47	.001
Used 1 or more strategies <i>confidently</i>	70	44	.001
Attended in-service on <i>AifL</i>	(14) ^h	44	.001
Will use formative assessment in future	79	63	.05
$n=$	56	178	

^gBEd4 students had one long placement in the year. PGDE (S) had three short blocks in schools.

^hAnswers 'volunteered' by BEd4 students but no specific question in their survey.

Reviewing classroom strategies employed on at least a daily basis in 2006, high percentages of both groups indicated they had shared learning intentions, used open questioning and 'wait/thinking' time daily with classes (Table 7). At first sight these indicate much higher uptake among BEd4 than for earlier cohorts, but specific questions were included for each strategy in the 2006 survey but not previously so the data are not really comparable. 'Sharing the success criteria' was used less often on a daily basis by secondary than by the primary students (63% and 78% respectively). For secondary students, 40% 'shared the standard for a good performance' on a daily basis with their pupils. This is, of course, frequently done for homework, exam preparation and internal assessments within secondary teaching and links to the formative use of summative assessments.

Significantly more primary students gave detailed written feedback on a daily basis to pupils than did the secondary students (43% compared to 15%). Instead, secondary students more often used brief positive feedback and target setting through 'two stars and a wish'. Significantly more BEd4 used 'traffic lighting' (brief pupil self-assessment) daily than did the secondary students. That such differences emerged for feedback was not unexpected. On placement, primary students teach a single class of up to approximately 30 children full time but secondary students teach several classes across the 12–18 age range on several occasions throughout each week.

Helpful campus factors volunteered by primary students included course readings (36%), specific lectures and seminars (27%) and the AifL website (9%). Secondary students were asked specifically about resources that had encouraged their understanding and if campus inputs were adequate (Table 8). A large majority of secondary students (89%) agreed the readings had been helpful and over half (54%) had explored the national website on several occasions. Almost two thirds wanted more campus time specifically for this in professional studies and slightly more (72%) wanted additional time within their teaching subject courses.

Both groups were asked to suggest factors influencing their use of formative assessment (Table 9). The placement factors most frequently cited as facilitating such

Table 7. Daily use of formative assessment strategies: BEd4 & PGDE(S) 2006.

Classroom Strategies	BEd4 %	PGDE(S) %	Fisher's Exact Test $p \leq$
	Used Daily	Used Daily	
Share Learning Intentions	78	82	NS
Share Success Criteria	78	63	.05
Sharing the standard	-	38	n.a.
Open Questioning	98	90	.05
Thinking/Wait Time	88	81	NS
No Hands Up	39	44	NS
Pupil Peer Assessment	8	26	NS
Pupil Self Assessment	15	36	NS
– Traffic lighting	47	14	.001
Feedback			
– Detailed written feedback	43	15	.001
– Brief e.g. '2 stars & a wish'	5	23	.05
$n=$	56	178	

Table 8. Campus factors affecting formative assessment use: BEd4 & PGDE(S) survey 2006.

	BEd4	PGDE(S)	
	Agree %	Agree %	Fisher's Exact Test $p \leq$
Read ARG publications	36	89	.001 ⁱ
Used LTS AifL website	9	54	.01 ⁱ
Need more in generic course	–	65	n.a.
Need more in subject course	–	72	n.a.
$n=$	56	178	

ⁱPGDE (S) students were asked in *specific* items. BEd4 students volunteered answers to an open question.

practice related to school ethos, with many longer comments referring to the importance of supportive schools and teachers, reinforcing the earlier item (Table 6). Some explained such support had allowed them to develop their practice with constructive criticism and deepen understanding to enhance children's performance. There was a specific question for secondary students on any attendance at relevant school or local authority in-service during placements. Just over half had attended such in-service at some time during the year. No specific question was included in the BEd4 survey. Only 14% of the primary students volunteered that they had attended such in-service in 2006.

Students suggested several factors had inhibited implementation. For both groups, the greatest barrier was a perceived lack of time but significantly more of the primary students cited this as a factor. On placements, primary students were responsible for their class continuously for three weeks, without any guaranteed non-contact time. Secondary students had almost one third of the week as non-contact time during placements. Within both student groups, a few students were in schools that had not really begun to focus on AifL and some expressed their disappointment at this. Another negative issue cited by a very few students related to attitudes expressed by teachers

Table 9. Factors volunteered as influencing formative assessment use: 2006.

	BEd4 %	PGDE (S) %	Fisher's Exact Test $p \leq$
Factors favouring implementation			
– Supportive teachers/school	52	20	.001
– In-service	14 ^j	54	.001
– Children's attitudes	4	12	NS
No favouring factors volunteered	20	43	.01
Factors inhibiting implementation			
– Time	41	20	.01
– Negative teacher attitudes	23	17	NS
– Lack of confidence	9	17	NS
No inhibiting factors volunteered	34	45	NS
$n=$	56	178	

^jBEd4 students volunteered answers in an open question. PGDE (S) students were asked in a specific survey item.

against the initiative. Finally, a very small group of secondary students themselves made negative comments on the overall principles or on some classroom strategies (e.g. traffic lighting).

Discussion and conclusions

Student teachers' images of good practice are heavily influenced by their own experiences as pupils (Calderhead and Robson 1991). These students might have been expected to be less willing to implement formative than the more traditional summative assessments that they had personally experienced relatively recently in schools and in their degree courses. Instead, this study indicated the opposite – many students positively adopted the ideas and eagerly experimented with the classroom strategies.

Black et al. (2003) identified four groups when reviewing ways their teachers implemented formative assessment. First were 'experts' embedding strategies fully into everyday practice; 'moving pioneers' were successful with a few strategies and beginning to develop further; 'static pioneers' restricted themselves to using one or two successful strategies; and, finally, 'triallers' made attempts but had not embedded any strategies into their everyday practice.

In the current study, many primary students expressed enthusiasm and incorporated several strategies into daily practice. In 2004, 29% and by 2005 81% of BEd4 students might be described as at least 'moving pioneers', regularly using several strategies and expressing clear intentions of following these up into induction. Through detailed interviews with four BEd4 students in 2006, it was clear some students were well on the way to becoming 'experts'. Integrating strategies was seen as an important aspect of their normal professional practice.

Most students implemented some strategies but few secondary students had integrated regular detailed feedback into their practice – identified as crucial for children to understand how to do better (Black et al. 2003). Secondary students expressed less confidence and wanted more campus inputs. This suggests they more often ranged among the 'static pioneers' and 'triallers' with fewer 'moving pioneers' than among the primary group. During ITE, some students feel under pressure to conform and may only outwardly adapt to the prevailing culture through 'strategic compliance' (Hawkey 1996). The emphasis in secondary schools on exams may have influenced the few who expressed doubts – perhaps forming a new fifth group, the 'sceptics'.

To what extent had these students really taken on board the principles of formative assessment? Almost without exception in 2006, both cohorts stated their intention to continue with it during induction, as had many in both previous BEd4 cohorts. Even for the 'moving pioneers', this could not, however, be guaranteed. Spillane (1999) found among experienced teachers who were very positively disposed toward new approaches, most failed to continue in their practice with innovations they supported in principle. Crucial for continuation was interaction with the innovation beyond the personal level to professional engagement, discussion and ongoing enquiry. This links to the professional discussion, action research and review model encouraged for teachers involved in this Scottish initiative (Hutchinson and Hayward 2005).

Had students in the current study moved beyond the personal into professional engagement? More than one third of the initial BEd4 cohort in 2004 had engaged in action research on placement which focused on formative assessment. Later BEd4

cohorts were required in assignments formally to evaluate implementation of formative assessment and set targets to meet assessment benchmarks for SFR. The current study indicated that over the three years, increasing proportions of primary students confidently and consistently experimented with classroom strategies that the KMOFAP research suggested were valuable tools in improving children's learning. This was to be expected given the staged roll-out of AifL over this period. Almost all expressed the intention to continue with them into their induction year. Secondary students evaluated aspects of formative assessment within assignments and a majority also indicated strong intentions to continue into induction. Clearly, students were engaging at a professional level in relation to Spillane's model. To assess whether students did actually continue to do so required follow-up research into induction beyond the scope of the present study. Future surveys for the STNE and IP initiatives may provide some evidence.

Examination of factors which encouraged students to experiment might allow an estimate of continuing implementation. Wenger (1998) emphasised entrants in workplaces draw on 'communities of practice' – colleagues with greater experience, skills and knowledge – for support, especially during times of difficulty. Developing a good relationship with mentors on placements is crucial for students' eventual success (Adey 1997). Dewhurst and McMurtry (2006) also highlighted the importance of 'social factors – belonging, participation, collaboration, responsiveness, clear and successful communication' (170).

As beginning professionals, many students in the current study identified with teachers modelling these classroom strategies and saw continuing with these as integral for best professional practice today even for new teachers like themselves.

Differences in sources of support were slight between the two latest cohorts although many secondary students wanted more support from campus courses. Similar messages were given to both groups through course readings, seminars and assignments; national policy and resources; and in-service. There were no major differences identified by either group as a result of negative teacher attitudes or poor pupil behaviour.

For the 2006 student cohorts, primary (BEd4) were more confident and consistent in using classroom strategies than secondary PGDE (S) students. Several factors related to both uptake of the initiative in schools and the nature of the two programmes might account for this.

First, the primary students were engaged in a four-year programme coinciding with the AifL development. More primary students were placed at any one time in schools already implementing formative assessment compared to secondary students. In addition, secondary students had three different school placements, each for six weeks, working with several teachers. Primary students worked closely with one class teacher throughout their single 11-week placement. Primary students identified the high level of support on placements from schools and teachers and this linked to previous research on the importance of relationships with mentors in influencing students' attitudes. However, a powerful limiting factor for innovation among the primary students was time. The demands of full-time teaching after completing the programme might inhibit further development in implementation in future practice. Fortunately, unlike these limited placements, the Scottish induction scheme offers probationers, regardless of sector, a reduced (70% of full time equivalent) timetable with guaranteed non-contact time and mentor support in the same school for the whole induction year.

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Notes on contributor

Elaine Cowan is a Senior Lecturer and Co-ordinator of BA and Combined Degree Programmes at the School of Education, The University of Aberdeen, UK. After teaching Geography and Modern Studies (Citizenship) for over 20 years in Scotland, she was seconded to the Scottish Qualifications Authority (1998–9) and then the Higher Still Development Unit (1999–2001) developing Scotland's revised post-16 national qualifications framework. Her interest in assessment continued after she joined the University as a subject tutor for the PGDE Secondary Programme and later as Depute Director of that programme. She supported the Assessment is for Learning initiative 2002–8 as a consultant and as a member of the Scottish Executive Education Department's AifL Higher Education Group. Her main research interests relate to Assessment and Citizenship.

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