Hargreaves S., De Brucker J., Belmans W. (Artesis-Plantijn AP University College, Antwerp, Belgium)

DESIGN-BASED RESEARCH FOCUSING ON THE INFLUENCES OF A PEDAGOGICAL THREE-FIELD METHODOLOGY IN STUDENTS' LEARNING OUTCOMES

Анотація. У статті проаналізовано результати експериментального дослідження ефективності педагогічної підготовки майбутніх вчителів в процесі вивчення мови у спліт-класах (SCT) за тригалузевою методологію. Висвітлено новий підхід взаємозв'язку комунікативного навчання мови (CLT), самостійного навчання (SSL) та інформаційно-комунікативного навчання (IКТ).
Ключові слова: комп'ютеризоване навчання мови (CALL), навчання у спліт-класах (SCT), самостійне навчання, змішане навчання з використанням ІКТ.

Аннотация. В статье проанализированы результаты экспериментального исследования эффективности педагогической подготовки будущих учителей в процессе изучения языка в сплит-классах (SCT) по трехуровневой методологию Изложен новый подход взаимосвязи коммуникативного обучения языку (CLT), самостоятельного обучения (SSL), информационно - коммуникативного обучения (ИКТ).
Ключевые слова: компьютеризированное обучение языку (CALL), обучение в сплит-классах (SCT,) самостоятельное обучение; смешанное обучение с использованием ИКТ.

Annotation. This article deals with the results of experimental study of successful training of teacher trainer in language learning in split-class teaching (SCT) in a three-field methodology. This research focuses on a new approach linking communicative language teaching (CLT), self-sustained learning (SSL) and focus on from (FonF) with ICT in a novel language training environment.
Keywords: computer assisted language learning (CALL), split-class teaching (SCT), self- sustained learning, blended learning & technology (ICT).

Due to a very heterogeneous student intake and a newly developed interest in the teaching profession, teacher training colleges have to show enormous creativity to respond to this new and challenging situation.

Pedagogic educational considerations. According to the administrative Bamaflex system the Artesis Teacher Training College student input is very heterogeneous. In the past, students that graduated mostly from a general secondary education (ASO) were attracted to the teacher training colleges. Nowadays there seems to be an ongoing shift to students with a more technical (TSO), vocational (BSO) and artistic (KSO) secondary training background. There is a strong inflow of TSO students and with nearly 50% they form the biggest group (Artesis data, 2009). This is significantly higher than argued by the research by Rombout (2006), where the full Artesis University College scores 37.1% for TSO students commencing their higher education. The Artesis screening project from the PWO-diversity research (2009) concludes that 42.7% ASO, 11.6% BSO, 2.2% KSO and 43.4% TSO students stream into the college.

The teacher training department for professional bachelors consists of nursery education, primary education and secondary education. The last group has a more specific subdivision for general subjects (languages, sciences, ideology), physical education, music education and technical subjects.

Attention in this paper is given to secondary education teacher training students majoring in English. The Bamaflex tables 1 and 2 show a significant amount of students come from an ASO-oriented secondary school training but most have a KSO/TSO/BSO background. First year nursery education is represented by 1K, primary education is 1O, secondary education general studies are 1AV, music, physical education and technical subjects are 1MO, 1LO and 1TV respectively.

Table 1*

Summary of input 1st year students teacher training college

	1K	*1O*	*1AV*	*1MO*	*1LO*	*1TV*	*Total*
ASO	16	37	40	9	37	1	140
KSO	3	12	4	3	0	0	22
TSO	48	61	46	8	62	24	249
BSO	38	13	16	2	13	11	93
Other	1	0	4	1	1	0	7
Total	106	123	110	23	113	36	511
Check	106	123	110	23	113	36	511

Source: Artesis data recorded on 22nd October (2009).

Table 2*

Summary of input 1st year students teacher training college in percentages

	1K	1O	1AV	1MO	1LO	1TV	Total
ASO	15%	30%	36%	39%	33%	3%	27%
KSO	3%	10%	4%	13%	0%	0%	4%
TSO	45%	50%	42%	35%	55%	67%	49%
BSO	36%	11%	15%	9%	12%	31%	18%
other	1%	0%	4%	4%	1%	0%	1%

*Source: Artesis data recorded on 22nd October (2009).

Because of this mechanism the intake in this specific branch of teacher training is of a very heterogeneous kind during the first year of higher education. Amongst these students there are quite a number who had a lot of English during secondary school (modern languages) or elsewhere (studying abroad, travelling,...) and others who only acquired a basic knowledge of English in a non-language oriented secondary school study or were confronted with the subject long ago within or out of an educational context. The previously acquired knowledge is very diverse and by times worrying.

Economic considerations. Next to the fact of heterogeneous considerations there is the issue of enrolment multiplication. In 1988 there were only 6 starters and more than 20 years onward (2009) 65 students found their way to teacher training college and the English department. Only a small amount of these students graduate. Unfortunately a large percentage of students drop out and this cannot be the aim of a professional bachelor course in higher education. Training this large and heterogeneous group of students to become full-blown English teachers is a painstaking and difficult job. Teaching a group of such diversity calls for a new pedagogic approach that takes into account the heterogeneity and the magnitude at the same time.

Theoretical-pedagogical foundations. In a study by Tynjälä & Gijbels 'Changing World – Changing Pedagogy' the authors state that in today's rapidly evolving society, we are confronted with an exponential increase in information, a growing need for innovation and the requirement to develop new and sufficient skills.

A quintessential challenge for today's higher education remains the development and implementation of teaching and learning practices that nurture the skills in students to acquire and apply their knowledge in an efficient and effective way, think critically, analyse, synthesise and form opinions and attitudes (Segers, Dochy & Cascallar, 2003).

We need to train students who are being prepared for a future that is mainly unknown (Bowden & Marton, 1998). Employers report that students with a vocational training do not have enough adequate and transferable knowledge and skills in order to be productive (Streumer & van de Klink, 2001). Researchers as Resnick (1987) argue that knowledge gathered at schools is too far away from the fieldwork and that therefore fresh school-leavers are not fully applicable when dropped onto the labour market.

The same is very much true about higher education. Too little knowledge can be used to solve complicated problems. Heading for and implementing instruction that develops the students' communicative skills is crucial. More skills we argue to be capital for students are: make them think in an efficient and effective way, learn students to evaluate the quality of internet information, solve complex problems, work in team(s),..., just to name the most evocative ones. All of the mentioned skills stay important challenges in higher education of the 21st century.

During the first year of higher education students witness that collaboration as a didactic format is not often introduced by lecturers. Memorising and reproducing knowledge during examinations is still the most 'encouraging' way to pass your tests. Traditional ex-cathedra teaching produces inert knowledge (Mandl, Gruber & Renkl, 1996). Society needs experts who can communicate, work in teams, share knowledge with colleagues in order to reach common aims and apply new knowledge in new situations (Tynjällä, 1999).

Integrative pedagogy. The model of integrative pedagogy (Tynjälä, 2009) describes the principle of integrating key elements of learning and the development of expertise. Professional expertise consists of three basic elements which are intertwined: theoretical knowledge, practical knowledge and self-regulative knowledge.

While old school pedagogy or traditional education has treated them separately, modern pedagogy emphasises the unity of theory and practice. Besides theoretical and practical knowledge, the third component of expertise is referred to as self-regulative knowledge which includes meta-cognitive and reflective skills (e.g. Bereiter and Scardamalia 1993). Actions that belong in this category are e.g. discussing with lecturers, tutors and peers; writing analytical essays, building portfolios and doing tasks with self-evaluations. Writing a blog during a training period or learning how to reflect are also part of this category. The process of integrating the theoretical and practical knowledge topped with self-regulation can be seen as the problem-solving model.

As mentioned above, the integrative pedagogy and problem-based learning are closely related. Barrows (1996) recognises 6 basic characteristics that link both.

1. Learning is student-centred: the student is central in the learning process and can make decisions related to what/how/when to study, ...;
2. Learning happens in small groups under guidance of a coach or tutor;

3. Coach or tutor facilitate and guide the process;
4. Learning starts out of an authentic problem, prior to studying;
5. Authentic problems stimulate learning as a tool to activate problem-solving skills;
6. Acquiring knowledge is managed by self-sustained learning.

Design-based research. Although the three-field methodology is argued by the Integrative pedagogy model, the research project also supports on the design-based research paradigm (Baumgartner et al., 2003).

Researchers, stakeholders and lecturers involved in educational research agree that problems and topics from the fieldwork are often separated from the research itself. Design-based research mixes empirical data with theoretical models from learning environments, because it is essential when using this methodology to understand how education and innovation work in practice.

Pedagogic Methodology. *The three-field methodology* is based on the split-classes approach (Hargreaves, 2005; Hargreaves, 2009) and is characterised by working in small groups while focusing on the four skills activities (reading, writing, listening and speaking). This approach is being implemented using design-based research where the *how*, *when* and *why* questions of this educational research project in practice are being charted. This design creates the opportunity to fine-tune the pedagogical input while the project is in full development. Split-class teaching research indicates significantly strong scores related to motivation and deep learning with students (Hargreaves, 2009).

During the 2009-2010 academic year the three-field methodology was introduced for the English courses *oral and written English*. A year later it was also introduced for *English didactics*. All 65 English students who respectively have 8 contact hours per week in semester 1 and 7 contact hours in semester 2, attend 4/5 hours of English in a plenary session and a period of 3 contact hours using the three-field methodology for *oral and written English*. *English didactics* is a semester 2 course and has only 1 contact hour per week and uses the virtual variant of the three-field methodology.

During a split-class session (3 hours) in the three-field methodology the lecturer tries to support, coach and train the students but focuses on the skills where s/he is needed in order to have an effective lesson. The class group of approximately 65 students is split up into 3 smaller groups and distributed across the 3 fields i.e. 'communication' (CLT), 'self-sustained learning' (SSL) and 'focus-on-form' (FonF).
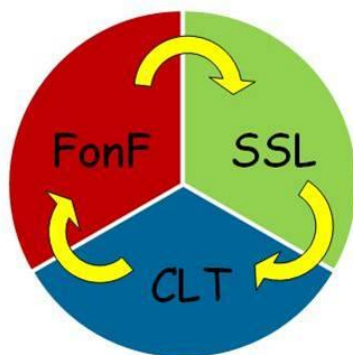
Figure 1. Visualisation of the fields and carousel mechanism in the three-field methodology

The four skills are activated across the 3 fields but the lecturer integrates extra attention and care in the 'communication' field (CLT; Harmer, 1983; 2001) for the speaking skill is of major importance. Role-playing, giving presentations and micro-teaching are some of the actions being dealt with in this field. In the 'focus-on-form' field (FonF; Doughty & Williams, 1998; Long, 1991: in Boers et al., 2007) we highlight structures such as grammar, vocabulary and pronunciation in context and recognise individual learning differences related to pick-up time and prior knowledge. The 3rd slot in the learning carousel is the self-sustained learning field (SSL), which deploys the didactic concept of the WebQuest-model (Dodge & March, 1996) and stresses activities on reflective, meta-cognitive skills and self-regulation. All fields are closely intertwined and there is a relevant link in topic(s) between them. The screening at the beginning of the academic year gives a direct input to all fields, the FonF and SSL in particular. Every student is allocated to a group and each group gathers 1/3 of the total group of students. After every 3-hour session in the three-field methodology each student will have undergone communication practice, focus on form with its structural training and the self-sustained learning field using the WebQuest model aiming for the optimisation of the self-regulative skills.

WebQuests are authentic and highly structured problem-based learning tasks (Boud & Feletti, 1991) which encourage students to collaborate and solve complicated problems in a way they learn more than when executed individually (Vygotski, 1978; De Corte, 1998; Laevers, Van den Branden & Verlot, 2004 in Nicaise & Desmedt, 2009).
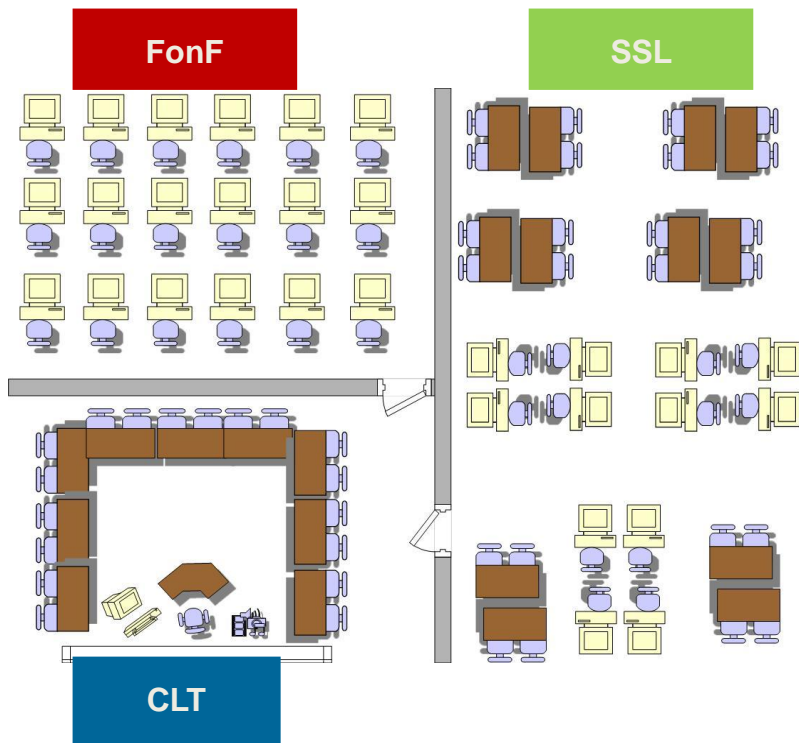
Figure 2. Three-field methodology floor plan

This socio-constructivist approach using technology as a learning stimulator and challenging lesson materials that fit the students' learning world runs through the entire course design. Students are encouraged to work together and use technology as a learning stimulator: they don't learn from a computer but using a computer (Jonassen, 1991). Each field gets and is given feedback by the lecturer or/and the peers. This approach creates a synchronous (contact hours), an asynchronous (VLE i.e. virtual learning environment and WebQuest assignments) and a powerful collaborative learning environment (everyone works on the same tasks at different periods in time) in one go. Students each hold a part of a pedagogic jig-saw puzzle through which motivation and involvement are optimised.

These cohorts of students differ from earlier cohorts (pre 2009-2010) in particular because of the strong, curriculum implemented ICT-component they experience and the fact that because of the three-field methodology they also benefit from the working in small groups. Pre 2009-2010 graduates were educated in large

auditoriums and large groups in ICT-poor learning environments using passive and theoretical approaches being not student-centred.

The main research question we would like to address while developing the three-field methodology are:

1. Can the three-field methodology optimise the success rates of this heterogeneous group of professional bachelor students studying English when compared with pre-2009 graduate output?

2. What is the motivation and perception of the students undergoing this methodology?

3. How do the lecturers involved experience this approach when focusing on workload? Where does this pedagogy generate an asset? Is this approach transferable within the training department?

Research methodology. In the academic year 2009-2010 the kick-off was given for this new *cohort research*. The three-field methodology research logs students' output in their higher education career focusing on their study as a professional bachelor secondary education in English. Three aspects of the students' development in function of their success rate in this research are central:

– the communicative development (CLT): knowledge and 4 skills mastery;

– the development of the self-regulative skills in function of FonF (Focus-on-Form);

– the development of the meta-cognitive and reflective skills by using the WebQuest model.

To monitor the students for the above mentioned qualities they will be exposed to interviews, tests and questionnaires. Previous schooling, SES i.e. socio-economic status, formative and summative evaluation, age,... are all scrutinised. This information is gathered through coupling the cohort information with the Bamaflex files which are administered by the Artesis central office. Three moments of information gathering have been planned. A first round (2010-2011) for the above described group of students. In the 2nd and 3rd round (2011-2012 and 2012-2013), these groups will be examined once more and will be compared with the new and old cohorts (pre 2009-2010) of graduates and will function as the reference group. The students' success rates and studying time will be monitored.

Preliminary results. Although the kick off for the project was given only in September 2010 there are already some useful preliminary indicators. Students describe the methodology as intense but fruitful. Learners use the English language intensively in various contexts. Amongst the three-field methodology first learning environment perception impressions responded by the students are the active learning ingredients, the variety of instruction and freedom to develop skills, the fixed week-by-week repetitive approach (rhythm and structure). Further impressions are: working at your own pace and communicating in small groups. All students addressed the high FUN level as principal motivator.

Researchers and lecturers underpin these first impressions and are aware that the clarity of the SSL-tasks and answer templates are important pivots in the

whole approach. Heavy workload and time management are always in (re-)consideration. First drop-outs are a fact but this means we keep the more motivated budding teachers. In the near future on the other hand we should shift the focus from material development to process mechanisms that optimise the self-regulative skills of students.

Discussion. In this research we focus on a methodology called split-class teaching (SCT) in its three-field variant. It is a pedagogical approach combining the pros of communicative language teaching (CLT), self-sustained learning (SSL) and Focus-on-Form (FonF) in a computer-assisted language learning (CALL) format. The first being recognised as a quality instrument for stressing the significance of language functions in a variety of contexts and for a variety of purposes, involving realistic communication aiming at successful language simulation and performance, the 2nd (SSL) captures the meta-cognitive, self-regulative knowledge and reflective skills using the WebQuest model as conceived by Dodge & March and the 3rd (FonF) for highlighting a task-based learning approach where adequate time and effort is spent on formal grammatical, vocabulary, pronunciation,... structures using all available multimedia components, thus eliminating the vague language framework and obscure word pick-up. While previous studies had already provided ample evidence of the ICT, CALL and CLT benefits, the present study is intended to explore potential benefits of the split-class three-field teaching technique to improve students' quantitative and qualitative output i.e. obtaining a degree in the end. We are investigating the three-field methodological impact on students' four skills performance, their learning environment perceptions and how self-regulating skills can influence the path towards successful studying.

Because research data are not yet available we consider it premature **to draw conclusions**. While previous studies had already provided ample evidence of the ICT, CALL and CLT benefits, the present study is intended to explore potential benefits of the split-class teaching technique in its three-field variant. Forecasts and first impressions are looking promising, though.

"Education is not the filling of a bucket, but the lighting of a fire." W.B. Yeats (1865-1939).

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Рецензент: к.пед.н., доцент Попова Д. А.