Deploying *Moodle* Capabilities to Showcase Interactive Content and Language Learning in the Engineering Students’ Foreign Language Training

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Abstract

Drawing on the European Union’s strategic employment-related policy of flexicurity, the present article argues in favour of deploying Moodle’s interaction-supporting features in special purpose language teaching with a view to developing highly interactive and content/outcome-oriented learning settings capable of empowering engineering students with employability-increasing skills (i.e. digital, generic, language skills) and engineering field-related knowledge/competences.

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1. Introduction

The ever-increasing employers’ dissatisfaction with the shortage of university-leavers who can demonstrate both language proficiency and specialism-related knowledge brings sharply into focus the inevitability of approaching university foreign language training in terms of content-centered language learning or what is labeled in English language teaching as Content and Language Integrated Learning (CLIL), designating simultaneous learning of discipline-specific content and foreign language in which knowledge of the language acts as the mediating tool for the learning content.

Equally important, current European language and employment policy instruments (Common European Framework of Reference for Languages (CEFR, 2001), *New Skills for New Jobs: Anticipating and matching labour market and skills needs* (2008), *Skills Supply and Demand in Europe: Medium-term forecast up to 2020* (2010)) regard as vital the development of core functional and transversal skills, pointing to foreign language skills, digital skills and generic skills (e.g. problem-solving, analytical, self-management, team-working skills, etc.) and prioritize their supporting role in shaping flexicure employees activating in rapid technological change-marked business environments easily affected by overeducation/overskilling or undereducation/underskilling.

In line with these challenges and the changing practices of today’s socio-professional contexts, the present article highlights the immense potential of the open-source learning platform *Moodle* (*Modular Object-Oriented Dynamic Learning Environment*) in developing interactive and highly productive settings for integrated academic content and

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language learning, enabling engineering students’ acquiring of flexicurity-supporting skills and engineering field-specific knowledge.

2. Research background

The European employment-related policy of flexicurity, targeted at “ensuring that EU citizens can enjoy a high level of employment security, i.e. the possibility to easily find a job at every stage of active life and have a good prospect for career development in a quickly changing economic environment” (Towards Common Principles of Flexicurity: More and better jobs through flexibility and security, 2007), features four major components that include flexible and reliable contractual arrangements, comprehensive lifelong learning strategies, effective active labour market policies and modern social security systems, the second of which mainly addressing universities and their responsibility to shape and release graduates equipped not only with engineering field-specific knowledge but also with employability-supporting skills. European reference tools advance as a major asset the cross-sector skills base, which refers to a set of mixed-nature functional skills such as generic skills (problem-solving, analytical, self-management, critical thinking, team-working, socio-professional relationship skills), foreign language skills, digital skills (on-line research, widgetizing, podcasting, blogging skills) that ensure individuals’ increased autonomy, adaptability, lifelong learning ability and, implicitly, employability.

In addition to the current European employment policy instruments, the present research also draws on the social constructivist pedagogy and its key principle centered around the concept of interactivity in its multiple forms: student-to-student interaction, student-teacher interaction, student’s interaction with the learning material. Regarded as a “well-defined educational philosophy” (Rice, 2007:8), this learning principle underlies Moodle and showcases a very congruous user interface since “as you go through a Moodle site, things look, feel, and function consistently. But more importantly, you interact with each activity, your classmates, and the teacher in a consistent way, whether it’s in the chat room, a forum, or leaving feedback on workshop. (Rice, 2007: 8).

Specific outcomes already validated by a Moodle-supported Technical English Course developed as an add-on e-learning support within a LLP project (ViCaDiS – Virtual Campus for Digital Students – (http://www.vicadis.net/) have also provided useful insights for the present article. Mainly envisioned to tackle three sensitive issues related to English language teaching for specific purposes (ESP teaching), namely the swift outdatedness of paper-printed ESP learning materials, students’ insufficient exposure to quality ESP instruction in traditional learning environments typically limited to only two hours of instruction a week (e.g. technical universities’ foreign language curriculum stipulates 2h/week), whereas “a typical learner needs a minimum of four hours a week of quality contact with a language in order to make progress” (Rost, 2009), current academic challenges related to student motivation, this demand-oriented course has showcased fully engaging web-based activities structured in 5 modules, each developing simultaneously engineering field-specific knowledge and foreign language skills, while forcing students to acquire and develop transversal skills.

A consistent body of the assigned tasks involved wikipage creation and blogging assignments, successfully carried out by students, given the wealth of information provided and the thorough documentation demonstrated by the displayed webography. A genuinely appealing student-owned learning network has been generated, that is, undoubtedly, superior to numerous traditional learning supports, which would have failed, particularly, in terms of content novelty and real-time upgradability, of limitless authentic language immersion and of student networking and team working.

Furthermore, it is essential to note that students have appreciated this e-course as a positive team-working experience and, more importantly, have become aware of the benefits of collaborative work and learning networks. Notice, in this respect, some of their comments in the post-piloting questionnaire: “Students are able to communicate no matter where they are and they are able to work in groups on projects that would normally involve a meeting.”, “Students can help themselves very easily. As we all know, each of us is studying in a desired field and we can’t have all the knowledge we need, so partnership with other students from different fields is a plus.”, “Every student is knowledgeable in his/her field. By interacting with other students (s)he may share his/her knowledge and learn from various opinions and ideas.”.
Against this wider, three-perspective mindset and also taking into account the engineering student-oriented competences, as well as main idiosyncrasies of web-based language teaching, the next section pinpoints Moodle’s interactive learning features facilitating integrated academic content and language learning.

3. Moodle’s interaction-supporting features showcasing integrated academic content and language learning

As Rice (2006) distinguishes, Moodle’s features fall into three major categories:

- **static features/resources** whose content students can only read, (re)view or collate but cannot interact with (web pages, text pages, links to files already uploaded in the course or links to content available on other sites, content-organizing directories and labels);

- **interactive features allowing** students’ interaction with the teacher and the learning system (assignments edited by teachers and completed by students, online journals only viewed by the student-issuer and the teacher, interactive lessons, fast-administered quizzes, choices i.e. teacher-issued questions to retrieve feedback, surveys reflecting students’ engagement and attitude towards learning intended as two-way mirrors both for teachers and students;

- **social features** prioritizing student-to-student interaction and, off course, allowing teacher shadowing (chats, forums, glossaries, wikis, blogs, peer-assessment workshops, messaging).

Secondary features which do not fall strictly under one of the above-mentioned categories may be made available given Moodle’s extensibility which allows the subsequent installation of new features, plug-in modules, etc.

Several prerequisites must be considered in the design and implementation of a moodle-based language course customized for engineering students:

- awareness of engineering student-oriented competences identifiable as **specific linguistic competences** (e.g. adjectives describing shapes, dimensions, fluctuations, degrees of difference, verbs and nouns describing properties, equipment performance and maintenance, equipment faulty behaviour, processes, procedures, phases), **sociolinguistic competences** realizing socio-professional relationships (e.g. managing professional encounters, deploying non-discriminating and non-sexist language), **functional competences** overlapping discipline-specific competences (e.g. assessing equipment reliability, writing operating instructions and user guides), generic competences (problem-solving skills, information-retrieving skills) and digital skills (e.g. widgetizing, podcasting) and enabling simulation of real-life situations characteristic of engineering work environments;

- ESP teachers’ rigorous control of electronic resources and of starting research points and indication of reliable technical sites, online dictionaries and glossaries of technical terms whose content is scientifically controlled, since there is a strong tendency among students to use free resources such as encyclopaedia Wikipedia whose content is not fully scholarly validated;

- as some ViCaDiS students stated in the post-piloting questionnaire, it is wise to develop such modules as blended learning forms and to organize several face-to-face meetings with students since the electronically-mediated contact is insufficient. It seems that students are much more motivated and self-confident when they have non-mediated, face-to-face confirmation and validation of their results, not just via-the-internet contact, which gives them a certain amount of self-uncertainty;

- the smooth running of the courses is conditioned by the engineering students’ knowledge background in terms of language proficiency and digital literacy which should be at least of intermediate level, otherwise students cannot cope with the assigned tasks and the whole learning experience becomes time-consuming and, implicitly, unattractive.

Given the above-mentioned peculiarities, Moodle’s functionality and engineering students’ training needs, it becomes obvious that the most effective enablers of interactive academic and language content are wikis, blogs and glossaries featuring three major advantages: interactive production of student-owned learning content, which makes the learning experience more meaningful and increases learner’s autonomy and sense of responsibility, domain-specific knowledge sharing and collaborative work that ensure time-saving learning and team-working abilities.
Chats, forums, messaging, choices and surveys are highly efficacious in terms of feedback-based or opinion exchange-based interaction, both forms of interaction developing communication and professional relationship skills which ensure graduates' smooth integration in professional communities.

In order to best exemplify how Moodle supports interactive content and language learning, a module content customized for engineering students has been simulated in the table below, mapping Moodle features to engineering field-specific knowledge, language skills and employability-supporting skills:

<table>
<thead>
<tr>
<th>Latest Technology</th>
<th>Moodle Feature-Based Assignment</th>
<th>Engineering Field-Specific Knowledge</th>
<th>Targeted Language Skills</th>
<th>Employability-Supporting Skills</th>
<th>Additional Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Topic-oriented wikis:</td>
<td>Latest Trends in Security Technology</td>
<td>State-of-the-art technology; Technology-related knowledge; New products and related advancements; Performance of latest technology-based products; Faulty behaviour; New technical concepts;</td>
<td>Language deployed to describe technologies; Language deployed to assess equipment performance; Language deployed to explain causes of faulty behaviour; Writing technical reports; Product descriptions; Evaluative language; Critical thinking – related language Gist/specific information listening of spoken technical discourses; Gist/specific information reading of written technical discourses;</td>
<td>Online research skills; Analytical skills; Critical thinking skills; Information-exchange skills; Team-working skills; Socio-professional interaction skills;</td>
<td>Time-saving, dynamic, meaningful collaborative learning; Cross-curricular knowledge sharing; Real-time information upgradability; Learning autonomy;</td>
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<td>Latest Trends in Medical Technology</td>
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<td>Latest Trends in Military Technology</td>
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<td>Nanotechnology-Based Products</td>
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<td>LED Technology vs. Plasma Technology</td>
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<tr>
<td>Topic-oriented blog:</td>
<td>Faulty Technology</td>
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<td>Glossary of specialised terms belonging to security/medical/military/nanotechnology/display technology terminologies</td>
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<tr>
<td>Forums, chats, instant messaging</td>
<td>Podcasting and widgetizing tasks</td>
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</tbody>
</table>

4. Conclusion

The dynamics of current socio-professional settings, particularly of engineering environments, imposes a new rethinking of academic special purpose language teaching in terms of simultaneous assimilation and development of engineering field-specific knowledge, of language skills and of mixed-nature functional skills, assets that can shape students into versatile and flexicure individuals, capable of taking responsibility for managing their own career development and lifelong learning needs.

References


ViCaDiS – Virtual Campus for Digital Students – http://www.vicadis.net