AN INDUCTIVE AND OPPORTUNISTIC DETECTION OF A PEDAGOGICAL PATTERN IN A 17 ONLINE COURSES SAMPLE

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Abstract

LabSET (Support Lab for Telematic Learning – University of Liège, Belgium) applied a pedagogical pattern detection process on 17 online courses designed by faculty. The analysis unearths 11 instances of an activity structure named here RQAT (Reading-Questions/Answers-Test) which offers an alternative (among others) to the conventional lecturing, still extensively practiced in higher education. The recurrence and the relative invariance of the RQAT learning design legitimated an attempt to format it as a pedagogical pattern, used within LabSET's missions of teacher professional development. The conceptual documentation of RQAT suggests also an "illustration" of the pattern and its linkage to a taxonomy of skills.

Introduction

"Patterns are not created or invented; they are identified via an invariant principle (of good design) as manifest across different places and cultures" (Fincher, 2002a). The detection process of the pattern documented in this article was conducted according to an inductive method, (Brouns, 2005), an approach "which allows patterns to be induced from existing courses". Although Brouns advocates for an automation of such a process, the RQAT pattern was here identified via a "human-made" inspection. The process can also be described as "opportunistic": "It takes as its starting point an observation about the quality of an actual situation and then tries to pin down exactly what it is about that situation (and others like it) that is good" (E-LEN, 2004). Authors oppose the adjectives "inductive" and "opportunistic" to approaches labelled as:

- "based on instructional theory": "Pedagogical patterns are commonly created by human cognitive processing in writer's workshops" (Brouns, 2005);
- "top-down": "you can start by trying to identify those things for which you know that you need a good pattern. This could be by brainstorming within a group of experienced practitioners, or working from an existing text on elements within the design of learning. The top-down approach provides a faster way to generate a large number of potential patterns" (E-LEN, 2004). Such presentation of patterns' creation process tend to convey the idea that they could be produced "on demand". We submit that too a hurried assimilation of patterns to" best practice" (see section 4) reinforces this view which leads to a play down of one important aspect of patterns' initial requirement: observed recurrence.

RQAT emerges as a pattern from the observation of existing courses (four courses are related to educational technology. Other courses come from a broad range of concept domains). Nevertheless, the couple "problem-solution" it instantiates received a first theorization by Gibbs & Jenkins (1992) and Leclercq (1998). RQAT is composed of three learning events. In the first one, the student receives material to read (R). In the second, he asks questions to the teacher (Q&A). In the third one, he performs a test (T) on the content read and clarified. For some professional educators, this pattern may at first sight seem obvious. However, for many teachers who authored an online course according to RQAT, the pattern represents a sweeping change, leading them (and their students) from a "chalk and talk" course to blended or fully e-learning, from pure "transmission/reception" to a more task-based and

student-centred method. Therefore, it might be not so trivial to document a pattern which enabled so many trainers to cross those lines.

In the first section, we develop the reasons we have for assimilating the RQAT activity structure to a pattern. In the second section, we express this recurring learning design in an Alexandrian pattern format (with two additions: a "pedagogical photograph" of the pattern and a link to a taxonomy of skills). In the final section, we elaborate on the benefits we expect from the use of pedagogical patterns in our everyday work with academy.

"Patternity test" for RQAT

"A pattern is a named nugget of insight that conveys the essence of a proven solution to a recurring problem within a certain context amidst competing concerns". Among possible definitions, we chose Appleton (2000). Appleton comes from the software domain. So far, articles focused on pedagogical patterns either pick up Alexander's definition (Goodyear, E-LEN) or produce a "scattered definition" putting diverse emphasis on problem-solution couple, invariance, abstraction, recurrence, best practice, design rules (The Pedagogical Patterns project, Brouns)… Fincher (2002) opts for the definition of Rielhe & Zullighoven (1996), having also computer sciences as a background. Despite the quality of this abstract definition, we stick to one mentioning explicitely the "couple problem-solution", because this expression makes patterns more understandable and familiar to teachers. Does RQAT match this definition?

Recurring problems

From the interviews of the teachers having authored the online courses composing the sample, it appears that those who implemented an RQAT learning design structure were concerned by the following problems:

- high quantity of expository teaching (lecturing);
- low level of individual participation in large groups settings;
- lack of preparation by students for class time;
- lack of time for discussion in class.

The pattern RQAT is considered by practitioners as a possible reaction to the aforementioned general problems in pedagogy. The last two items are also documented as common instructional challenges for teachers from University of Waterloo (Buzza & al., 2005).

Proven solution

Patterns can be seen as solutions bridging between empirical evidence, experience, theory and the practical problems of design. This convergence is observed with RQAT.

Empirical evidence and experience

After Alexander (1977, 1979), several authors underline that even if something appears to have all the requisite pattern elements, it should not be considered as a pattern until it has been verified to be a recurring and non-arbitrary phenomenon (Appleton, 2000, Fincher, 2002b). For RQAT, this empirical quantitative condition is met since 11 teachers fostered the RQAT structure as an effective design solution for the problems listed in section 2.1.

Educational theory

This empirical evidence is backed up by theory. Observed from a psycho-pedagogical viewpoint, the pattern RQAT implemented by the teachers in replacement of the conventional "learning-by-being-

taught" makes sense. Constructivist pedagogy invites teachers to promote learner activity, what is being done by getting students read and ask questions instead of being maintained as pure listeners (see the section "Body" of the pattern).

RQAT expressed in a pattern format

Found in 11 online courses, the RQAT structure prompted its capture as a pattern. The format selected sticks to the fundamental principles and structure of Alexandrian patterns. The sections' titles as well as their short elaboration in brackets come from Goodyear (2004). We decided not to use the formats coined by Bergin and E-LEN. Whilst they share clear pedagogic concerns, they are made up of 11 (Bergin, 2002) or 12 (E-LEN, 2004) sections, which appears rather complex for a use of patterns as tools for teacher professional development (see section 4). E-LEN itself considers that pattern format could be accommodated to different uses or target audiences: "We chose to use a very comprehensive structure to enable us to capture all relevant aspects of a design pattern. A detailed structure such as this can be helpful when writing patterns; however, fully mature patterns might best be communicated to others by adopting a simpler structure closer to Alexander's original" (E-LEN, 2004). Broadly, our day-to-day work with teachers convinced us that limiting the components of any model or tool acts as a cognitive facilitator (Miller, 1956) and an incentive for adoption.

Name

Personal and active appropriation of content

A picture (Showing an archetypal example of the pattern)

(For architecture, it seems obvious to provide the illustration of a pattern. When it comes to pedagogy, it becomes a challenge. More generally, "user-friendly" visualisation of pedagogical scenarios or patterns is an issue discussed today (Griffiths, 2005, Richards, 2005, Fincher, 2002a). The "picture" proposed here is inspired from the "8 Learning events model" (Leclercq & Poumay, 2005) which introduces standardization of basic teaching and learning activities. It is composed of 8 documented teaching/learning events, i.e. ways of learning. This high level tool-kit provides guiding principle for taking decisions about how to divide the continuum of pedagogic practice into pedagogically meaningful parts. The 8 events are basic elements, "primitives" (Casey, 2005), which can be applied in any context wherein activity structures' analysis and building are at stake. In order to obtain this "atomistic" representation, highlighting the succession of intended mental process in the learner's mind, we interpreted the student's activities composing the RQAT pattern into the "8 Learning events" vocabulary, hoping that it will help teachers to get a quick understanding of the pattern. The upcoming efforts, especially in the European project iClass whose LabSET is a partner, will try to produce other pedagogical patterns from existing online courses and will build on this model (see the experimental research website http://www.labset.net/projets/iclass).

Context (how the pattern helps to complete some larger patterns)

The RQAT pattern is mainly concerned with the establishment of appropriate organisational forms for promoting personal and active appropriation of content. It presents as an alternative to traditional lectures delivered to large groups of students. The pattern has very wide applicability to almost every domain, for literary topics or for mathematics and sciences. The pattern can be used in face-to-face settings but can be implemented in an e-learning mode, the content being made available online and the Q&A session taking place in a forum. As possible competing concern, it can be mentioned that RQAT remains content-oriented. Yet, for teachers naturally committed to this orientation, the pattern represents both a reassuring ground and an exploratory territory. This intermediate position might explain partly why teachers willing to make a first move (just one!) toward e-learning embrace this pattern quite naturally. Aside from the specific skills (tied to the content of the course), RQAT, due to its own internal features, trains the following transversal skills (coming from the taxonomy of Knight, 2004):

- Personal qualities
  - Independence (ability to work without supervisor)
- Personal qualities
  - Core skills
  - Reading effectiveness (the recognition and retention of key points)
  - Listening (focused attention in which key points are recognised)

(Characterized by an abstraction effort and a concern for reuse, we wonder whether pedagogical patterns can mention very specific skills or learning objectives, i.e. skills and objectives tightly rooted in the concept-domain of the course from which they are extracted. These seems more fitted to dedicated scenarios. On the contrary, transversal (reusable) skills, located at a level of abstraction similar to patterns can find place in a pedagogical pattern conceptual documentation).

Problem headline (to give the essence of the problem in one or two sentences)

Traditional lecture delivery of course content in large groups quite often ends up in a good deal students "switching off". How can instructors facilitate the rise of all learners' level of mental activity in the content appropriation process?

Body of the problem (its empirical background, evidence for its validity, its analysis, its rationale, examples of different ways by which the pattern can be manifested)

Teachers who give lectures to large audiences experiment frequently students' passivity during the course. According to Leclercq (1998) an active participation implies that the learner has mastered the prerequisites. Attending a course without being "impregnated" to some degree with the content delivered reduces the expected benefit of this attendance. Conversely, individual preparation provides the student with a first representation of the topic, allows the subsumption process (Ausubel, 1978) to occur, and supports more commitment and (mental or observable) participation. The removal of the conventional lecture and its substitution with a Q&A session is an additional step toward passivity reduction. The course period is used for answering learners' questions on the content read, discussing and criticizing it. Such approaches of the content, left at the students' initiative, are still kept very limited in the traditional "learning-by-being-taught" though they produce a more in-depth learning (Leclercq, 1998). Additionally, reading material before the lesson and prepare oneself to ask questions about it during the course benefits to the student as it trains him/her to being more autonomous and responsible, especially when a formative test closes the sequence and gives him/her an indication about the knowledge level he/she achieved.

Solution (Stated as an instruction, so that you know what to do to build the pattern)

Use the RQAT structure, or one of its variant, as a substitute for traditional lecture delivery of course content. For that, make sure:

- ? to get students engage with material before the course time;
- ? to consider the course more as series of workshops than of lectures;
- ? to warn students that a test will be the closing activity of the sequence and have this test ready.

A diagrammatic representation of the solution

As educationalists and teachers, we do not see, at this stage, what could be the content of this section in the case of pedagogical patterns.

Embellishment (to link the pattern to the smaller patterns which are needed to complete it)

An assignment to read the material before the course does not mean that the material will actually be read by all students. It would be logical to link RQAT to existing or forthcoming patterns addressing this issue and outlining solutions. It should be possible and useful also to link the Q&A activity to smaller patterns related to knowledge-sharing, questioning and critique through discussion, for example, the pattern "Learning through discussion" (McAndrew, 2004) or the pattern "Honor questions" (Fricke, 2003). (In this section, we hesitated to mention observed variations of the pattern. The courses sample shows nuances in the execution of RQAT that reflect its different interpretation by instructors. For instance, the "R" (reading) part is sometimes reduced, to the benefit of the Q&A. The opposite situation is noted as well. Both are variations in intensity regarding the student' activities composing the pattern. In two courses, the basic structure is present but "enriched": a debate in groups is added preceding or following the Q&A session. In other courses, there is an inversion of the Q&A session and the test. When we refer here to 11 courses built on RQAT pattern, we mean a "strict RQAT". Only variations in intensity have been tolerated. Extra learning events or differences in the activities' order are not comprised in the figure. But the question remains open: to what extent can an "invariant" be accommodated before loosing what makes it specific? What is the tolerance of a pattern to interpretation?)

Patterns as staff development tool

Designing for networked learning is a complex task which deserves better tools and methods. In this respect, LabSET, as a support centre for helping faculty to design online courses, has been developing pedagogic conceptual tools. All of them try "to strike an appropriate balance between rigour and prescriptiveness and to find appropriate levels of generality. Practitioners, quite reasonably, complain if the "guidance" they are given appears too vague or is unsupported by research. Equally, they resist tight prescription – whether it be prescription of the technology to be used, or the pedagogical strategies to be employed" (Goodyear, 2004). We believe that patterns locate at this right level between rigour and prescriptiveness and can therefore be worth incorporating in our conceptual tool-kit as powerful staff development vehicles when used as the basis for discussion and collaborative work with teachers, allowing them to identify, clarify the components of their own practice and trigger their pedagogic creativity. This use of patterns should be distinguished from two other views. The first one is tempted to equate patterns and best practices: "Patterns are designed to capture best practice in a specific domain" (The Pedagogical Patterns project. See also recent discussion lead by the UNFOLD project (UNFOLD, 2005) on this topic). We do not support this conception. In our opinion, patterns abstract practice which is to be evaluated by the teachers. They are not good or bad independently of this situated judgment (Lave, 1990) by practitioners. The second view is tempted to see patterns as "recipes" likely to contribute to the "industrialization", "streamlining" of e-learning courses production by boosting immediate reuse opportunities and the associated resources and time savings. By linking patterns to some kind of template or semi-completed worksheet, time savings in the preparation of

lesson might be envisaged for users. Nevertheless, the main benefit we expect from the use of patterns must be found firstly in teachers' meta-cognitive professional development. As organizational and communicative frameworks, patterns embed promise of reuse in that they provide users with the freedom to contextualize them. Patterns offer principled, structured but flexible resource promoting the sharing and re-appropriation of ideas. They suggest rather than prescribe a solution. Solutions are intentionally incomplete: they offer guidance but require embellishment. As facilities in the hands of teachers, patterns demand effort and responsibility from their users. As McAndrew notes: "The point of patterns is not to support immediate reuse, but rather to support creativity (…) the descriptions used in patterns should not relieve teachers of pedagogic responsibility, but rather support their engagement (…) patterns should not resolve all of teachers problems, they should leave them with things to think about and decide" (UNFOLD, 2004).

Conclusion

LabSET scrutinized 17 online courses used at the University of Liège wherein it identified a recurring activity structure, documented as a pattern. None of the 11 occurrences of this structure constitutes the pattern itself but each exemplar illustrates an application of the solution the pattern documents. This pattern looks valuable from the learner's viewpoint, as it promotes a more active engagement with the content, and from a faculty development viewpoint as it is easily adopted, adapted and implemented by teachers. Not revolutionary, but realistic and flexible, RQAT (Reading,Q/A,Test) stands as a good guidance for going from a conventional expository teaching method to more constructivist approaches. LabSET contemplates going further in the identification of reusable parts of existing courses and, possibly, the recording of these recurring design experience in the form of design patterns. Those patterns will be looked for at the level of granularity where RQAT locates: pedagogical meaningful combination of learner's activities within a task-based instructional approach.

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