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An Andragogical Design Pattern for Asynchronous Online Discussions

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Abstract

A brief account is given of the emergence of interest in design patterns as solutions to recurrent problems. Details are provided about possible ways of structuring design patterns. A proposed design pattern for asynchronous online discussions is outlined by the author. It is intended to encourage a high level of participation in such discussions, and is based on the practice of an online degree course which has been running for over a decade. A rationale is given for the design pattern's features. The author maintains that the recommendations have been shown to work in achieving participation in a large number of live classes. He invites practitioners teaching in this field to apply the design pattern if they have similar objectives.

1.0 Introduction to Design Patterns

This paper proposes a particular design pattern for asynchronous online discussions, but what is a design pattern? Mor and Winters define it as follows:

"In our view a design pattern is a semi-structured description of an expert's method for solving a recurrent problem, which includes a description of the problem itself and the context in which the method is applicable, but does not include directives which bind the solution to unique circumstances. Design patterns have the explicit aim of externalizing knowledge to allow accumulation and generalization of

solutions and to allow all members of a community or design group to participate in discussions relating to the design." [1]

Computing scholars have made a tremendous contribution to the literature on design patterns. This contribution was partly inspired by the work of Christopher Alexander in the field of Architecture [2]. He argued that the solutions to similar recurring problems could be embedded in a series of design patterns. More ambitiously, he felt that these patterns were inter-related and could be combined together to form a pattern language to tackle problems in a particular domain.

Much of the work in Computing has been in the field of object-oriented software development. Erich Gamma, Richard Helm, Ralph Johnson and John Vlissides, often referred to as the Gang of Four, wrote a classic work on software design patterns in 1994 [3]. The Pattern Languages of Programs conferences were launched around the same time [4]. The design pattern concept has since been extended to the field of Web design and programming [5, 6].

It was therefore perhaps natural that this interest should be further extended to the idea of developing educational design patterns, particularly related to the teaching of object-oriented programming. This has been given particular impetus by the Pedagogical Patterns Project [7, 8]. In the academic discipline of Education, major contributions have been made to the development of design patterns by Peter Goodyear of the University of Sydney and, most particularly in a recent book, by Diana Laurillard of the University of London's Institute of Education [9, 10].

This paper puts forward a design pattern for the conduct of asynchronous online discussions. Andragogy may be defined as the method and practice of teaching adult learners. Practitioner experience has been that mature adult learners perform differently, and probably more effectively, in asynchronous online discussions than younger students. The pattern is therefore described as andragogical rather than pedagogical. It acknowledges a limit in the scope and effectiveness of the design pattern, but then the specification of the circumstances in which educational design patterns can work is often an important part of their definition.

It is possible to apply the term 'design pattern' to a very innovative and untried solution to some problem, but there are great merits in applying the label only to tried and trusted solutions. The design pattern here presented is therefore not entirely new, but is based on the experience of applying selected practices for over a decade in predominantly successful asynchronous online discussions.

There is often an assumption that almost all significant educational knowledge is contained in the academic literature, but there is an increasing realization that much of this knowledge is held by practitioners and will often not be published outside a specific organization.

In the field of education, Laurillard has perhaps been one of the most prominent academics to acknowledge this. She has argued that teachers are in a good position

to establish which methods and techniques work best [11]. The problem is that the knowledge that is developed is not articulated and shared. She suggests both that teaching should be regarded as a design science and that teachers should develop design patterns.

It is actually unusual to see an academic bridging the divide between the design science and design patterns traditions. They have tended to concentrate on different issues. Herbert Simon introduced the idea of the sciences of the artificial, referring to areas of intellectual activity that concentrate on the design of artefacts to solve problems [12]. This intellectual tradition inspired the development of the discipline of design science, particularly in the area of information systems [13, 14]. Here proponents have concentrated on the idea of developing new and innovative designs to problems of interest to university academics. The design patterns tradition has placed more emphasis on the reuse of tried and trusted designs to assist practitioners in vocational contexts.

This paper leans towards the latter approach. It argues that much of the knowledge about how to conduct effective asynchronous online discussions has not been codified in the academic literature. Where it has, it is supported by limited empirical evidence. Scholarly studies can claim the merit of academic rigour, but collectively they tend to work with limited numbers of students. Many of the student subjects are novices when it comes to asynchronous online discussions, and there are few longitudinal studies which show the effects of various approaches on experienced students after the novelty has worn off.

This is where practitioners have the advantage. They can test design patterns over many years on large numbers of students, most of whom are very experienced in taking part in such discussions. The compiling of evidence is done more informally, but the quantity of evidence is massively in excess of what the typical educational researcher can muster. In identifying the tried and trusted design patterns which solve specified problems, the practitioner often has better access to data. All scholars stand on the shoulders of giants, building on the work of others, but past wisdom is not contained exclusively in the academic literature. It is also owned by practitioners.

Design patterns are typically effective in certain specified conditions in addressing certain specific problems. Once the practitioner has catalogued these design patterns, they are available to academics, who may then explore more fully why they are effective and how widely they can be applied. More controversial is whether a few academic studies can contradict the evidence of years of experience in conditions that do not constitute a straightforward scientific falsification of a hypothesis.

2.0 An Andragogical Design Pattern

2.1 The Structure of a Design Pattern

There is no clear agreement about what information should be provided in specifying a design pattern. Suggestions can differ depending on the subject matter involved. As shown in Table 1, Alexander's list includes a Sensitizing Picture because he is outlining visual Architectural designs. Gamma et al include Sample Code because they are describing software design patterns. Bergin and Laurillard both concentrate on educational design patterns, but there are considerable differences in the approaches they take. In this paper the author has selected those variables which best accommodate the information he wants to convey, leaving to others the task of suggesting a standard structure for a design pattern.

Table 1: What should there be in a design pattern?

Author	Structure of the Design Pattern
Alexander (1977) [2]	Short Name, Rating , Sensitizing Picture [something visual], Context Description, Problem Statement, Text with Examples and Explanations, Solution Statement, Sketch, Further References
Gamma et al (1994) [3]	Pattern Name and Classification, Intent, Also Known As, Motivation (Forces), Applicability, Structure, Participants, Collaboration, Consequences, Implementation, Sample Code, Known Uses, Related Patterns
Bergin (2012) [8]	Problem/Issue, Audience/Context, Forces, Solution, Discussion/Consequences/Implementation, Special Resources, Related Patterns, Example Instances, Contraindications, References
Laurillard (2012) [10]	Origins, Summary, Topics, Learning Outcome, Rationale, Duration, Learners, Setting, Resources and Tools, Learning Cycles, Designer's Reflection

2.2 A Design Pattern for Asynchronous Online Discussions

1. **Pattern Name** – An andragogical design pattern for asynchronous online discussions.

2. **The Problem** – It is difficult to encourage students to engage in a high level of participation in asynchronous online discussions.

3. **Audience** – Mature adult students, typically 25 years of age or greater.

4. **The Solution**
   a. Asynchronous online discussions should be assessed and the weighting of the assessment, expressed as a percentage of the total, should not be negligible.
   b. One or more discussion questions should be specified.
   c. An initial response (without reading the responses of others) should be required from students within a specified period.
   d. Once the initial response is made, students should be free to discuss contributions made by others in a debate lasting for a finite period with a specified deadline.
   e. Students should post something on at least a minimum number of days within the discussion period.
   f. There should be a requirement for each student to make a minimum number of substantial posts.
   g. Assessment should encourage students to go beyond description or the presentation of information they have found. Comment, criticism, comparison, contrast and analysis should be encouraged.
   h. Students should be urged to draw on their own vocational and life experiences in their contributions.
   i. Research should be encouraged in order to provide supporting evidence and to challenge student preconceptions.
   j. The discussion should be moderated, but not dominated, by a teacher/instructor.
   k. The maximum and minimum number of participants in the discussion should be specified.

5. **Implementation History** – This approach has been used for over 10 years on the University of Liverpool Online Master's Programme delivered by Laureate Online Education. The selection of features and the rationale are those of the author based on his experience of moderating these asynchronous online discussions over a similar period.

6. **Limitations** – The procedures outlined in the design pattern may not be effective with younger undergraduates who have minimal work experience. The approach is probably more likely to work in subjects with strong vocational links, such as Computing and Business.

7. **Resources** – A Virtual Learning Environment (VLE), sometimes also known as a Learning Management System (LMS), such as Blackboard or Moodle; a moderator, who will typically be a teacher/instructor; an appropriate number of students (falling within a specified number range), with remote access to the VLE over the Internet.

3.0 Rationale

Different authors will place more or less of the rationale within the specification of the design pattern itself. Alexander, for instance, outlines design patterns which are completely self-contained, apparently requiring no further justification. Here the author has chosen to provide much of the rationale separate from the design pattern specification to avoid the clutter of too much detail.

The approach outlined in this design pattern is very prescriptive. It is the key solution to the problem of participation. There is nothing more tragic than the sight of teachers wringing their hands because students will not participate in online discussions. Those students are often simply making rational decisions, and it is not sensible for teachers to expect their mature students to behave irrationally.

Mature students have many voices ringing in their ears – those of employers, family, friends, and voluntary organizations to which they have commitments. All those voices are crying out for attention. If there is not a clear motive for students to participate in online discussions, the educational institution's voice will simply be drowned out, as rational human beings order their priorities. Students who are given no good reason to participate do not do so.

There is sometimes a vain hope that, although an educational course does not require participation and taking part does not contribute to the students' grades, students will somehow respond to a vague appeal to altruism. It may work in the odd case and in the very first week or so of a class, but in the long term it does not. The observation of student behaviour by a moderator of discussions over a long period will lead to this conclusion, but the author's own experience has been supplemented by observing his own behaviour as an online student. He was glad to take an online Master's degree offered by the Open University at a time when he was fully committed to the benefits of asynchronous online discussions. The discussions during this degree made little or no contribution to the overall grade. They were effectively voluntary. It would have been nice to participate, but when you are up to your armpits in alligators, it simply does not make sense. Other students on that course apparently felt the same way.

That is why there is a need for Item 4a in this design pattern. A significant assessment weighting not only provides a good reason for students to participate, it signals that the educational institution places great importance on asynchronous online discussions. Discussions with, for instance, a weighting of 40% of the total grade, will create a loud voice, drowning out the competing cries for attention most of the time.

The idea that there should be one or more discussion questions to which all students should make an initial response without viewing the responses of others (Items 4b and 4c) provides an opportunity to assess some of the skills normally tested in essays. This may help an institution "sell" the concept of discussions with a significant assessment weighting. The length of the initial response is not something that should perhaps be specified in a design pattern, but a piece of several hundred words would be appropriate. This can incorporate research, from peer reviewed academic journals if necessary, and can involve the development of a reasoned argument. This gets away from the concept of an online discussion as a cosy little chat where one line pleasantries are exchanged. It can be a serious and challenging academic exercise.

The idea of having everyone contribute an initial response to a discussion question by some deadline early in the debate has another advantage. Sometimes students post contributions later in the debate that introduce a completely new sub topic. Most of the time, however, they will be responding to some other student's post. They could be agreeing and providing additional arguments and evidence; they could be qualifying or disagreeing with what was said. When a student is responding to others, the more contributions that student can potentially respond to, the easier it is to think of something to say. Creating a critical mass of posts early in the discussion gets the debate off to a flying start as students have plenty of posts on which they can comment.

The virtues of making this initial response "blind" are, in the author's mind twofold. Firstly, from the student's point of view, if he or she is one of the later contributors, the process of reading a significant number of other students' posts can be very intimidating. It can leave the student thinking, "What is there left to say?" Making it a "blind" contribution eliminates that problem. Secondly, it reduces the chances of plagiarism, or at least of the student facing accusations of a certain kind of plagiarism – that of copying from his or her classmates' initial response after reading what they have written.

It is particularly true of students who are experienced participants in asynchronous online discussions that they will develop patterns of participation that fit in well with their other commitments. This is perfectly understandable, and any educational course for mature, part-time adults must help accommodate its students to some extent. In the classes the author teaches, students have deadlines by which work must be completed, but there is no requirement to work on any particular day or at any particular time of the day. This helps to accommodate different time zones, and the many other commitments that mature students have. It also takes

account of the fact that, in an online student body drawn from all parts of the world, there may be different days of the week which, for religious or other reasons, are regarded as days of rest on which no work is normally performed. Synchronous communication is, of course, extremely disruptive for such an international body of students.

Once an educational institution has shown due respect to its students' private interests, it is then entitled to require patterns of participation that maximize the chances of a successful online discussion. Studies of students who are inexperienced participants in such discussions will not always highlight the strategies that more experienced students develop over time. Scholars who rely too heavily on such studies may therefore not always appreciate the need to develop rules to deter patterns of behaviour that reduce the chances of achieving a successful debate.

Therefore, let us look at some of the rules contained in this design pattern and see why they are necessary. Items 4c and 4d specify deadlines for the submission of an initial response to the discussion question and any follow up posts. The author has already argued for the need to create a critical mass of posts early in a debate. That critical mass will not be created on a consistent basis without a deadline. In the modules the author teaches, there would normally be a weekly cycle starting on a Thursday. The initial response is due by the end of Sunday, and the follow up contributions have to be in by the end of the following Wednesday. Different cycles may suit other institutions better, but deadlines are necessary to ensure that contributions are available at times that help contribute to the success of the debate.

So what could possibly go wrong? The first category of problems relates to the kind of contributions that students may make. Someone may post something like this: "I agree with you completely". A fruitful debate would obviously be better served by a fuller answer. Under Item 4f in this design pattern there is therefore a requirement that students make a minimum number of substantial posts. The definition of "substantial" is obviously up to the individual institution, but it is recommended that this be expressed in terms of a number of words.

The content of posts may, at times, become too descriptive for higher education purposes. It may become too focused on the exchange of information e.g. "Here is a URL. Check it out". In the classes the author teaches a little more is required, and therefore there is Item 4g which requires students to go beyond description to comment, criticism, analysis etc. The grading system can be used to encourage this to the extent to which an individual institution requires. It should also be pointed out that it is difficult to have a debate where students are just exchanging information. In the author's classes it is expected that students will present a reasoned case for some position or course of action and then defend or amend that position in the face of reasoned argument.

Not all of the author's colleagues are equally convinced of the importance of research in online debates after the initial response to a discussion question has

been made. The author is convinced and hence he has included Item 4i in the design pattern. Most of the discussion questions that are used relate to matters in the public domain about which much will have been written, and about which there may be significant disagreement. They will typically not be exclusively empirical matters, but will often refer to what is desirable or worthwhile. The author would certainly be very keen that students draw on their own vocational experience. Students can learn a lot from each other's very interesting examples of how they addressed certain problems (Item 4h). It is desirable, however, that in certain circumstances they produce evidence from published sources to support their arguments. Research also helps challenge pre-conceptions, so that students are forced to question and re-evaluate views which they may have taken for granted (Item 4i).

Let it be assumed that students are responding to grading signals and are contributing some minimum number of substantial posts in the required timeframe. The next student strategy that could potentially threaten the success of online debate is the submission of follow up posts all on the same day. A successful debate will typically see posts by a substantial proportion of students on every day. In the author's classes, working on a weekly cycle, this would be the period from Sunday to Wednesday. If there are plenty of posts flowing into the debate on every day, there are plenty of new opportunities for students to respond to different points that are being made. If students were to make all their minimum number of substantial posts very early in the cycle, then the debate would be in danger of finishing before it had barely begun. There would be little or no debate towards the end of the period. Similarly, if students made all their follow up contributions on the last day of the debate, there would be very little time for students to respond to each other's contributions, and hence very little real debate.

These are the extreme cases, but even less extreme examples of these phenomena can make for a poorer discussion. It is therefore advisable to have something like Item 4e in the practitioner's rulebook. Requiring that students post a contribution on some minimum number of days helps to spread the posts throughout the period set aside for the debate. The constant flow of posts provides a constant flow of opportunities to respond to something new and develop the debate.

A set of rules alone does not guarantee a successful debate. A moderator can play a crucial role in steering things in the right direction (Item 4j). Such a person can obviously gently remind students during debates if the rules are not being adhered to, and can certainly do so in assessment feedback. Once the initial discussion question has been examined for a while, the discussion can tend to flag. A good moderator can re-ignite the debate by gently guiding it into related areas. One important method of doing this is by asking subsidiary questions. One problem that sometimes occurs is that students are inhibited about disagreeing with each other. Some have talked about politeness strategies that inhibit critical discussion [15]. A moderator can sometimes help by making mildly provocative statements with which any rational student should disagree. If students can be encouraged to

disagree with their teacher or instructor, acting as a moderator, they may become less uninhibited about disagreeing with each other.

In Item 4k of the design pattern, the author has recommended that there be minimum and maximum numbers of participants specified for an online discussion. He has argued that the more posts there are in the discussion, the more opportunities there are for students to respond to what someone else has written. This critical mass of posts is difficult to achieve if the number of participants is too low. Teachers can make their own decisions about the specified numbers, but if there were to be less than 10 participants, the author would feel that it would be difficult to achieve the required critical mass of posts in the later stages of the debate. The experience of the author and his colleagues is that groups of more than 20 soon become unwieldy. For the purposes of assessment, the number of posts the instructor (and indeed the student) has to read becomes excessive. The individual student is less likely to have his or her posts responded to and may come to feel anonymous and marginalized.

4.0 Conclusion

The approach in this design pattern is very structured, but structure has elsewhere been shown to encourage participation [16, 17]. But what is the purpose of producing this design pattern? Is it to stimulate an academic debate? Heretical as it may seem, the answer is No.

The author's sole claim is that this pattern works in achieving certain objectives. The primary appeal is therefore to the practitioner. If his or her objectives are close enough to those expressed in this paper, then the invitation is to try the design pattern to see if it works for that particular practitioner. Adapt it if need be to local circumstances and share experiences with others, possibly by writing an academic paper. If the practitioner has been trying other methods, then a comparison of the results produced by this design pattern and the previous approach would probably be of interest.

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