Active Summary

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INTRODUCTION

The Pedagogical Patterns Project [PPP] is under way to structure the patterns. We have a lot of proto-patterns which are under revision and shepherding. Patterns encapsulate the "core" of the problems and are usable in different situations. But in the pattern building process we sometimes lose the essence of the evaluation. An example is: I like very much the WHAT DID YOU EAT FOR BREAKFAST example written by Karen Karaim Brown [KKB]. It is an implementation of the PHYSICAL ANALOGY pattern written by Phil McLaughlin [PML].

On the other hand, there are patterns that solve similar problems or give similar solutions to different problems. We can more easily find the way among our patterns if we factor the similarity into a base pattern. These base patterns stress the "core" even more, but we also have to write the patterns which specialize them to enhance the utility of the pattern language. The specialized patterns are instantiated during the practice.

We can see examples of this method in the feedback patterns [JJH] where FEEDBACK is a high level pattern. There are some specifications of it Ike: POSITIVE FEEDBACK FIRST, DIFFERENTIATED FEEDBACK and EARLY WARNING. Another example is the Pairing Up patterns [JC] "A special case of PAIRING UP is MASTER AND APPRENTICE, another form of PAIRING UP is a PEER REVIEW."

A good base pattern is brief and "core". It is the outcome of some experienced people who had shepherded and negotiated it in a writers workshop. A good implementation and sometimes the instantiation is like a story. You can read it easily and it gives a brainwave.

Patterns are to be used. From this aspect I find the useful concrete solution as important as the abstraction. As James O. Coplien said in the writing group: "A pattern has to be more suggestive than prescriptive".

The following article contains two patterns. A base one, and one of its specializations. The ACTIVE SUMMARY pattern stresses the importance of activity also in the summary process, and quotes some known patterns for use. The EXHIBITION pattern is a method to make an ACTIVE SUMMARY and as the name suggests it is used outside education. The pattern shows us how we can use it in the education process.

The patterns are written in Alexandrian form similar to the form used by Christopher Alexander in his book 'A Pattern Language: Towns-Buildings-Construction' [CA]. The referenced patterns are in CAPITAL LETTERS and we can find their thumbnails in the last section.

ACTIVE SUMMARY

…you are at the end of a teaching unit and you need to bring closure to it.

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When the teacher presents the summary in lecture form, students are passively waiting for the teacher to give them the knowledge. They expect to have everything handed to them on a plate; as we in Hungary say 'They are waiting for the roast pigeon to fly into their mouth'. If the students know they have to present their knowledge, they will prepare for the lesson.

You want to engage the students to reinforce what they learned.

If the teacher guides a summary at the end of the unit, the students are only passive participants. This is inefficient. Even the best lecture, which is well articulated, logically built, and holds the audience's attention, leaves little mark on the mind of the audience. [AM] **Making the knowledge stick needs active participation.**

Therefore:

Give the students tasks, and share the solutions with all the members of the group. Through their own solutions they will go deep in a part of the material, and through the others' solutions they will get a broad picture of the whole material.

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During the presentation students are wanted to be brief, so they need stick to the essentials.

The pattern presents the opportunity of group work, so students can improve their project key-qualification.

The traditional way of ACTIVE SUMMARY is when the teacher asks the students questions and they respond and discuss.

A specialization of ACTIVE SUMMARY is the EXHIBITION pattern described below.

When preparing for an exam, students usually work together: they divide the material into different topics. Everybody writes a summary of the topic assigned to. By sharing these summaries with each other, the students achieve good results within reasonable time, even if preparing the summary is quite time consuming. If the self-

made summaries are shared via a presentation, they are ACTIVE SUMMARies using the EXPLAIN IT YOURSELF [JJH] pattern.

A known use is, Joe Bergin's doctoral program where the students get so much literature that it is impossible to read. They form groups and every group writes a summary about one part of the literature. Then they share the materials.

Another application of ACTIVE SUMMARY is a tutorial that leads to an examination. The students get a problem as homework (developing an application) whose solution needs the knowledge of the main parts of the material. On the last lesson(s) they present their solutions.

We can use the ROUND ROBIN [JMW] pattern to make an active summary. It is also one kind of the EXPLAIN IT YOURSELF pattern.

EXHIBITION

…you have applied ACTIVE SUMMARY. You can bring color into your lessons, engage the students and make the summary more efficient.

<p align="center">***</p>

You want to make an ACTIVE SUMMARY and find a way to get students to participate in an active summary.

The students need a summary after the teacher has covered the material at the end of a course or when we would like to re-enforce what students learned a few days earlier. (WRAP-UP pattern. [JE]) The aim is: to make an active summary, but not to spend more time than a traditional summary needs.

The traditional way to engage the students is a dialogue. If you ask questions you will not get the answer every time, or the answer will not be right, or full. It is a time-consuming process. On the other hand, most students do not like this method. The atmosphere can become unpleasant during the questions even if there are no consequences of the failed answers.

Therefore:

Give students a forum to exhibit what they know!

The students can make posters from the learned material. From the posters we can make an exhibition. While they are looking at the posters made by other participants, they get a full summary of what they have learned days before.

At the end you can assess and maybe award a prize for the best. (GOLD STAR pattern. [JB1]) You can evaluate not only the content but also the general impression. When we develop an application it is also important to make aesthetically pleasing user interfaces. This activity is the place where you can speak about it.

Figure 1: The exhibition

On a poster the students have to "speak" about a theme briefly, and get to the heart of the matter. If there are mistakes, we have to correct them with the students.

Some students do not like making colored posters. Do not force this activity! They can write a simple summary about the theme instead. Another solution can be making a short presentation about the theme, or making the poster on the computer.

This pattern is to bring color into the gray weekdays. It is not for frequent use!

It is a good idea for the teacher to make cards on the issues. The students can choose the theme of the poster. If you want to make a summary, the number of cards have to be the same as the number of posters in order to make at least one poster from every theme.

The students can make posters in groups. If each student makes a poster then each student experiences the stress of defending the poster. A group provides anonymity that reduces the stress that often comes up when we examine student knowledge.

Figure 2: Active work in groups

You can implement the DO YOU REMEMBER? pattern with this method, again, not with posters but by writing an idea on a piece of paper.

Figure 3: Adding the finitial touches

You can let the students use everything during the work, if you want to know how they see the big picture and how the parts relate to each other. Or they can use only the assistance of the development software (help facility). If you want to examine how well they understood the material, you should not let them use any assistance.

During the work students use the ASK YOUR NEIGHBOR pattern.

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It is useful on lessons which are not very efficient in any subject, like last lessons before vacation.

You can use the EXHIBITION pattern also when you start a course or a theme to test the students knowledge about the theme. (DO YOU REMEMBER pattern. [JE]) It is especially important in the education of advanced participants. [AM]

It can be implemented in two (or more) phases. At first the students make a part of the poster filled with their actual knowledge, and at the end of the course they can complete the work. It is a use of the SPIRAL [JB2] pattern.

For the work the teacher can provide things, I like colored cartoons, thick felt-tips, scissors, glue... I used colored papers with glued edges. It can be good, when the students can print or copy pictures, photos.

ADDITIONAL INFORMATION

I use the pattern at the end of the application development training. The students have to make application development several times during the semester. So their practical knowledge was tested several times. At the end of the training there is an oral exam. I use the EXHIBITION pattern on the last lesson before Christmas. The students have already learned the entire body of material but they have not prepared for the oral exam this time.

The students make groups with two or three persons. Every group has a topic.

The students could use everything. They work briskly. It is a challenge for them. There is always a good atmosphere. There is a competition among the groups, in spite of the fact that they help the other groups. There is time for a deep personal

dialog between teacher and student as well, and for a little humor, which we could find on some posters as well.
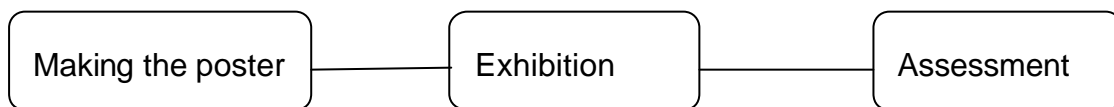

Figure 4: Mood of the meeting

There are two types of posters. One type has only the main information and is well arranged. The other type has much more information, but does not have good structure, its letters are often too small.

From the ready made posters you can prepare the exhibition.

The lesson has three parts:

Making the poster — Exhibition — Assessment

At the end the teachers assess the posters. The winners receive books (GOLD STAR pattern [JB1]).

THUMBNAILS

DIFFERENTIATED FEEDBACK

"Your students learn differently and at different rates. They understand you with differing degrees of precision. They have different backgrounds that make it easier or harder for them to grasp certain topics. In spite of all the difference, you want to give your students the kind of feedback that will most help each of them individually.

Therefore, give differentiated feedback whenever possible. The feedback to a student is tailored to the needs of that student." [JJH]

DO YOU REMEMBER?

„You want to repeat what the participants have learned so far, but you would also like to know how well they understood it.

Therefore, provide a short exercise where the students have to express the topics in their own terms." [JE]

EARLY WARNING

"If your students fall behind or miss early material it will be difficult for them to catch up and therefore difficult to succeed.

Therefore, give them EARLY WARNING when you see that they are headed for trouble." [JJH]

EXPLAIN IT YOURSELF

"Because topics are complex, the students may be able to repeat definitions and other material verbatim without real understanding. They might also not be able to extract the key ideas from the supporting material.

Therefore, invite the students to express the key ideas using their own words. If a student uses her own words you will be better able to judge the level of real understanding." [JJH]

FEEDBACK

"Your students want to learn the content of the course or seminar. But until you exercise and challenge their understanding neither you nor they will know what level of understanding they have achieved."

"Therefore, give the participants activities that exercise their knowledge and then give them feedback on their performance. The feedback should be differentiated and objective." [JJH]

GOLD STAR

„Students look up to professors as role models. They want and need our praise. Praise can be a prime motivator. Expecially when it comes from someone who is respected. Students work best when they feel good about themselves.

Therefore, when students do something well, praise them for it. Give a token of appreciation for work well done. This occur either publicly or privately. It can be a simple few words spoken in private or it can be an insertion into the student's permanent academic record. The forces at play here also suggest that you should never belittle a student even for poor work." [JB1]

MASTER AND APPRENTICE

"In an environment that uses as little written documentation, as possible, knowledge transfer between team members becomes a matter of direct collaboration, just like anything else. You cannot just pass a well-written document to the novice and expect her to read it. Rather you have to transfer tacit knowledge that resides in the heads of the experts only. Still, those who have the knowledge are usually needed to do the project work."

"Therefore, PAIR UP anyone who needs to learn something about the project with someone who is expert in this area. Let them do the work together until the apprentice has learned enough to work on his or her own. The main work – e.g. programming – should be done by the apprentice while the master watches and gives hints on how to do the work." [JC]

PAIRING UP

"Tasks, such as developing a design or complicated refactoring, require a constant

level of high concentration and assessment of different alternatives on quite an abstract level. It is hard for a single person to maintain the concentration for a longer period. Even worse, the person might not even recognize that her or his concentration is fading and the probability of errors raises."

"Therefore, pair up with a team mate to address a difficult problem. Change the roles between the active one who explains or shows the ideas and the passive one who asks regularly. Working in pairs should be at least a common way to do the work, if not the standard way." [JC]

PEER REVIEW

"If you need an expert's advice or decision when the expert is not available, stopping the work and waiting for the decision might not be the best choice. In many cases you can at least guess what the advice might be and continue to work in that direction. However, sooner or later you have to get the expert's opinion and therefore risk to have worked in the wrong direction."

"Therefore, start your work but be sure that the expert can take a look at your work and review it as early as possible. Try to guess what the expert would tell you. Make sure the material the expert has to review fits his or her mental model of the problem. Take care to keep the parts of your work changeable that rely on the guesses." [JC]

PHYSICAL ANALOGY

Students are new to any concept and are frequently told about modeling the concept in the real world.

Therefore, use PHYSICAL ANALOGY to reinforce concepts delivered in more traditional means. [PML]

POSITIVE FEEDBACK FIRST

"If you are negative with your students they may tune you out and not listen. If they are especially sensitive they may be hurt. If they are especially arrogant they may take your comments as an attack and attack back. You want them to feel good about themselves and also feel that they can do better.

Therefore, when you give feedback, start and end with positive feedback. Suggestions for improvement are sandwiched between these reinforcing comments." [JJH]

ROUND ROBIN

„One of the most difficult aspects of team work is getting everyone in the room to work on equal footing. Both organizational differences (jobs, position, etc.) and personality quickly and inadvertently lead to a core of speakers and a core of listeners. Moreover, the fact that the listeners are not talking does not mean they are not thinking or that they are in agreement. "[KBDB]

Therefore, to solve a problem go around the group. "As each member of the team contributes an idea, write it down on the board. The facilitator should do the writing since the other members of the team should be watching and thinking." If a team is chosen well, every member should be an important reflection. "The goal of the Round Robin is to allow the group to move ahead at an even tempo but to give people enough time to think." [KBDB]

SPIRAL

„Topics in a course are often interrelated. Too often lots of different topics are required for students to have enough tools with which to solve interesting problems. If we try to do the topics in any 'logical' order we tend to get bogged down in details and leave the students bored." [JB2]

Therefore, organize the course to introduce topics to students without covering them completely at first viewing so that a number of topics can be introduced early and then used. "The instructor can then return to each topic in turn, perhaps repeatedly, giving more of the information needed to master them. On each cycle of the spiral topics are covered in more depth and additional topics are included." [JB1]

WHAT DID YOU EAT FOR BREAKFAST

Students have difficulty remembering to use accessors and mutators (i.e. getters and setters) to retrieve and modify an object's data. You would like to illustrate that to avoid doing so is dangerous to the object's health, and hence to the application.

Therefore, ask a student (named Greg for purposes of illustration here), "Greg, what did you eat for breakfast?" Greg answers, say "A bagel and coffee." Then point out that Greg's public interface has been properly invoked, and Greg is induced to answer in an acceptable format, while hiding his implementation. Then describe that the visceral alternative is tipping Greg's head back, showing one arm down his throat and grabbing a piece of bagel. That violates the privacy of Greg's data, bypassing his public interface.

The WHAT DID YOU EAT FOR BREAKFAST pedagogy provides a PHYSICAL ANALOGY that will clarify the proper use of accessing methods and make students gulp when reminded of the alternative. [KKB]

WRAP-UP

„In a course people might learn a lot of things, but at the end (even of a day) they are often unsure if the time was well spent.

Therefore, provide a wrap-up that repeats the main points learned. The minimum just mention every topic that has been covered and review the specific points people have experienced." [JE]

REFERENCES

[AM] Andor Maróti: Can correspondence education be made more efficient? Magyar Felsooktatás, 2001/4. Kiadja: Professzorok háza. Budapest.

[CA] Christopher Alexander: A Pattern Language: Towns-Buildings-Construction, Oxford University Press, Inc. 1977.

[JB1] Joseph Bergin: Fourteen Pedagogical Patterns, Proceedings of EuroPLoP 2000, UKV Kinstanz, 2001. http://csis.pace.edu/~bergin/PedPat1.3.html

[JB2] Joseph Bergin: Spiral, http://csis.pace.edu/ppp/pp32.htm

[JC] Jens Coldewey: Interaction of Agile Development, EuroPLoP 2002

[JE] Jutta Eckstein: Learning to Teach and Learning to Learn Running a Course, Proceedings of EuroPLoP 2000, UKV Kinstanz, 2001. www.pedagogicalpatterns.org Example Patterns

[JJH] Jutta Eckstein, Joseph Bergin, Helen Sharp: Feedback Patterns, EuroPLoP 2002

[JMW] Jutta Eckstein, Mary Lynn Manns, Eugene Wallingford: Patterns for Experiential Learning, Proceedings of EuroPLoP 2001.

[KBDB] Kent Beck, David Bellin: Round Robin http://sol.info.unlp.edu.ar/ppp/pp6.htm

[KKB] Karen Karaim Brown: What did you eat for breakfast, http://sol.info.unlp.edu.ar/ppp/pp12.htm

[PML] Phil McLaughlin: Physical Analogy http://sol.info.unlp.edu.ar/ppp/pp16.htm

[PPH] The pedagogical proto patterns homepage: http://www-lifia.info.unlp.edu.ar/ppp

[PPP] The Pedagogical Patterns Project homepage www.pedagogicalpatterns.org