

Process in oo Pedagogy

A “Killer” Workshop

Carl Alphonc
University at Buffalo
alphonc@cse.buffalo.edu

Jürgen Börstler
Umeå Universitet
jubo@cs.umu.se

Michael E. Caspersen
University of Aarhus
mec@daimi.au.dk

Adrienne Decker
University at Buffalo
adrienne@cse.buffalo.edu

Michael Kölling
University of Kent
M.Kolling@kent.ac.uk

Abstract

The “Killer Examples” series of workshops are highly interactive workshops which have been an annual occurrence at OOPSLA since 2002. The goals of the workshops are to bring together educators and developers to share their object-oriented expertise, and to provide a forum for discussion of teaching techniques and pedagogical goals. The theme of last year’s workshop was design patterns; the the theme of this year’s workshop is *process*: for teaching, learning and programming.

While there is a formal application procedure to guarantee admission to the workshop, we accept walk-ins if space permits and the walk-ins have adequate interest and background to be able to contribute positively to the discussions.

Categories and Subject Descriptors K.3.2 [*Computers and Education*]: Computer and Information Science Education—Computer Science Education

General Terms Design

Keywords Object-orientation, Pedagogy, Process, Teaching, Learning, Programming

1. Themes and Goals

killer app The application that actually makes a sustaining market for a promising but under-utilized technology.

First used in the mid-1980s to describe Lotus 1-2-3 once it became evident that demand for that product

had been the major driver of the early business market for IBM PCs. The term was then retrospectively applied to VisiCalc, which had played a similar role in the success of the Apple II. After 1994 it became commonplace to describe the World Wide Web as the Internet’s killer app. One of the standard questions asked about each new personal-computer technology as it emerges has become “what’s the killer app?”

The Jargon File

For the past five years we have organized and run, with various colleagues from different institutions, the “Killer Examples” series of workshops at OOPSLA. These workshops have been well-received, and have adapted over the years in response to attendee feedback and to keep interest high.

Previous “Killer Examples” workshops have focused on gathering examples of design pattern usage which are suitable for use in a CS curriculum, especially in beginning courses. This has, to a large extent, put the focus on *what* we teach.

This year we shift the focus more to *how* we teach object orientation. This is a timely issue because many educators have been slow to adopt, unsuccessful in adopting, or worse, reluctant to try adopting, an object-oriented approach, especially in CS1-CS2 courses. We believe part of the difficulty stems from *educators* lacking a sound pedagogy for teaching newcomers to object orientation (be they beginning students or seasoned professionals trying to move into the OO arena) how to “think in objects”. Another part of the difficulty lies in *students* not being given a clear and effective process for tackling problems in an OO way.

The main **theme** of this workshop is therefore “process”, and the main **goals** of the workshop are to address questions like the following:

- What are the “killer” pedagogical processes that educators use?

- What are the “killer” problem-solving processes that students use?

We are interested in addressing these questions because finding answers to them will lead us to a better understanding of the following kinds of issues:

- While first-year undergraduate students often have prior coursework in computer programming, they appear not to be as well-prepared for university-level CS courses.
- What are the mental models (of programs/programming) held by novices? Knowing them could improve the way we teach.
- What is the role of early design/modelling in an objects-first curriculum?
- How does the teaching process and the students’ programming process address design/modeling?
- What are needs of industry - what will keep students competitive in the workplace?

2. How can I participate?

Although the workshop has a formal submission process for those who wish to present at the workshop, or simply wish to guarantee a space in the workshop, we understand that there is interest in participating without having made any formal submission. We therefore welcome walk-ins to the workshop, as space in the room allows. If you are interested in attending the workshop on a walk-in basis, drop by the workshop room and check it out!

3. Workshop activities and format

The exact details of the workshop program will only be known after this workshop description goes to press. However, the morning program will consist of presentations of accepted submissions, and some question/answer time.

In the afternoon we break into smaller groups for more intense and focused discussions. Each group consists of a presenter(s), at least one a workshop organizer (who serves as a facilitator), and discussants. We mix and match the groups so that everyone gets a chance to discuss each example with its presenter(s).

We generally also set aside some time at the end of the day to put together a poster about the workshop, for presentation at the conference’s poster session. The workshop poster is halfway prepared ahead of time, with general information about the workshop and its presentations, but with open space for workshop outcomes, to be filled in as the workshop concludes.

4. Workshop website

Up-to-date details about the workshop are available at:

www.cse.buffalo.edu/faculty/alphonse/OOPSLA2007