Reflective Diary for Professional Development of Novice Teachers

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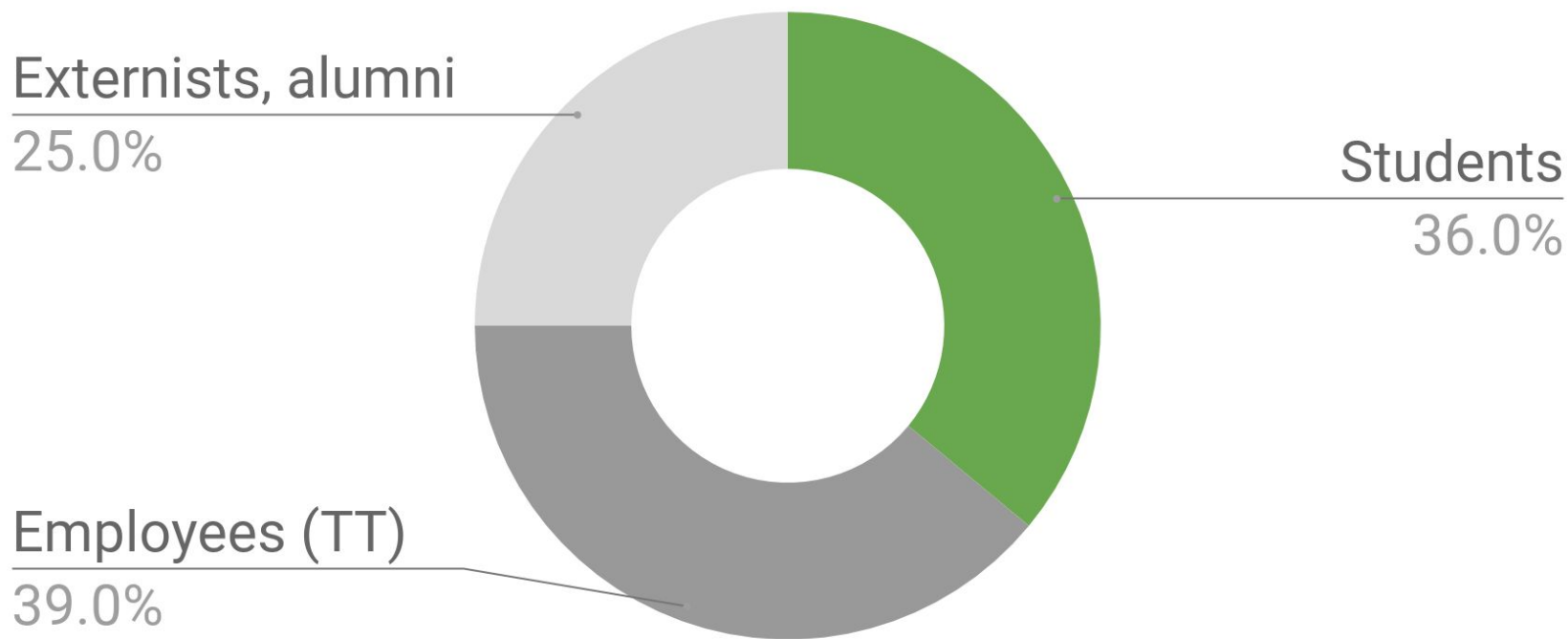MASARYK UNIVERSITY

2. 3. 2019, Minneapolis
SIGCSE 2019

The Context

- Czech Republic

- Masaryk University
    - 9 colleges
    - 32 500 students

- Faculty of Informatics
  (in US terms: "Computer
  Science College")
    - 2000 students

Headcount of Teachers and TAs

Externists, alumni
25.0%

Students
36.0%

Employees (TT)
39.0%

Typical Student (TA) Responsibility

1. **Lead seminars (sections) on programming, theory, ...**
    - 100 minutes, 20–25 students

2. Assign and grade homework

3. Individual consultations

4. Help with exam grading

But who's teaching the TAs how to teach (well)?

The Teaching Lab

Teacher/TA training sessions
- ○ Weekly sessions (2 hrs)
- ○ Knowledge sharing
- ○ Basics of group dynamics

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Core principles for improvement
- Teach regularly
- Observe the teaching of others
- Reflect your own teaching

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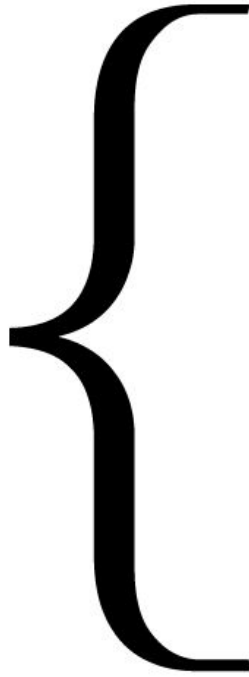
   -> Teacher's Reflective Diary
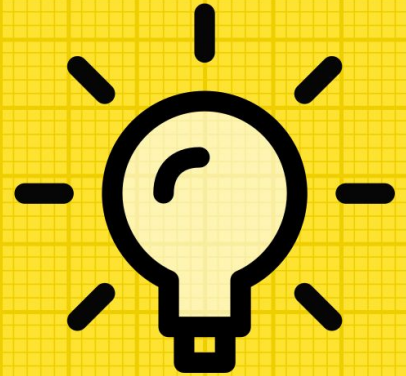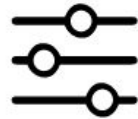
Diary Overview

Teacher's Reflective Diary

Introduction
2 pages

Weekly Reflection Pages
13 x 2 pages

Scoring Rubric for Teaching Skills
8 pages

Reference Handbook
6 pages
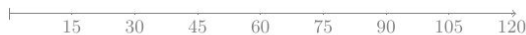
Weekly Reflection Pages

(overview)

Week 1

Time spent preparing: hours
Preparing slides, activities, tasks, . . .

What is the structure of the lesson?
Outline 2–6 blocks on the timeline below.

15   30   45   60   75   90   105   120

What precedents do I want to set?
Names, (in)formality, asking questions, starting on time, . . .

fill in before teaching

What is my lesson satisfaction?   ☹ ☹ 😐 ☺ ☺
What feelings do I have? What emotions do the students have?

What worked well?

1.

2.

What could have been better?

1.

2.

fill in after teaching

What (un)wanted precedents arose during the lesson?
How do I reinforce the wanted ones and suppress the unwanted?
What was the prevailing climate/mood during the lesson?
Do the students understand the course structure?
Do they know what they are expected (not) to do?
(On page 40 you can find more ideas to ponder.)

notes and comments

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(before teaching)

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(notes and
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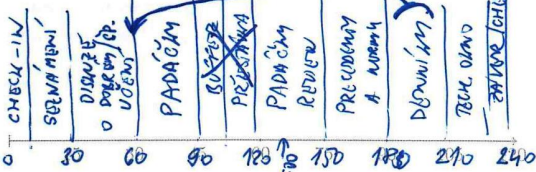
Weekly Reflection Pages

(usage example)

Týden 1

Příprava: 5 – 6 hodin(y)
Příprava materiálů, úkolů, pokynů, …

Z jakých bloků se moje hodina skládá?
Rozvrhni si 2–6 bloků na časovou osu níže.

Jaké precedenty chci ve výuce nastavit?
Oslovování, (ne)formálnost, kladení otázek, začínání včas. …

- ZAČÍNÁ SE VČAS
- NEFORMÁLNOST (OSLOVOVÁNÍ i ČAS, …)
- NA TABULI JE VEREJNÁ AGENDA

Jak jsem spokojen(a) s hodinou? ☹ ☹ 😐 😊 😄
Jaký mám pocit já? Co vidím na studentech?

Co se mi povedlo?
1. STRHNÚŤ PADÁČKAMI
2. IMPRO ... UPRATOVANIA AKTIVITA

Co mohlo být lépe?
1. BYŤ TU CELÝ ČAS
2. KONZULTOVAŤ DOPREDU S MARTINOM (NEMAŤ OČAKÁVANIA?)

4

vyplnit před výukou

vyplnit po výuce

MARTIN NORMY : SUBGROUPING (TPS) – ČO CHCEME
ROBIŤ LEN JEDNO (CHCEME / NECHCEME)
NORMY VS. INÉ VECI
PRÍKLADY ZO ŽIVOTA
MENEJ MONOLÓG, VIAC AKTIVÍT

Jaké chtěné/nechtěné precedenty se objevily na hodině?
Jak na další hodině podpořím chtěné a napravím ty nechtěné?
Jaká byla atmosféra během vyučování?
Rozumí studenti organizaci kurzu a ví, co se od nich očekává?
(Další tipy na otázky najdeš na straně 38.)

volné poznámky

ADVANCED
- SEZNAMOVÁNÍ MENOMAMA" MÁ PREREKVIZITU,
ŽE ? UŽ RÁR MIEN VEDIA?
→ PRVÝ PRECEDENS, UČITEĽ SA DEMONSTRÁCOU
SPÝTA NA MENO?

STANO CHREN VEĽKÁ SKUPINA: VECI TRVAJÚ DLHŠIE
STANDARD → ~22 V ALZO JE NA PRÁCU
(STARTING) POTREBUJU ODÍSŤ, NEDALI VEDIEŤ, NA HRANE
VÝUKA VO DVOJICI – JEDEN VEDIE
"HARVEST", DRUHÝ ZAPISUJE
NEJASNÝ ÚVOD

PADÁČM – 22 MIN.
REVIEW SUBGROUPING
SHARING
OTÁZKY (ADO JE DAVAŤ!)
CHCE DIŤ TEXT?
NAPÍŠTE TIMELINE

JE TO KRATŠIE, ALEBO SA ZDÁ
(SKORO NEDE FLOW BEZ POZNÁMOK)
CO DĚLAL A ДABY TO MALO EFEKT?

NEPREDÁVAŤ SLOVO,
UZATVÁRAŤ A
ČLOVEK SI HO
VEZME

MARTIN
ČO JE
DIVNÉ?

CO SLEDOVAŤ VE VÝUCE?
SLEDOVAŤ DRAMATURGII (MILČÍMMI NAVAZOVÁNÍ)
UVĚDOMOVAŤ SI NÁSTROJE A ICH EFEKTY

NEISTOTA → PRECEDENS → NORMA

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Teacher Evaluation Rubric

(self-assessment of teaching skills in 14 attributes)

7: Diversity and innovation in lesson design

Unaware: I teach the way I was instructed, or I copy the teaching I experienced myself. I don't consider any alternatives.

Beginner: I'm aware one could employ activities of different types to teach. Nevertheless, I don't know many of them, can't introduce them effectively or am unsure why to use them.

Guru: I know plenty of different activities and design my lessons to achieve variety. The selected activities effectively teach/practice what I intend to. They also engage students in class and increase their motivation to learn.
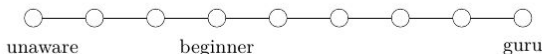
unaware — beginner — guru
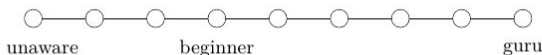
8: Broader context of my lessons

Unaware: I don't think about the broader context of my sessions and the course.

Beginner: It's difficult for me to explicitly name the knowledge, skills, and abilities I'm teaching. I don't know where these may be useful. I'm unable to see interconnections to other courses.

Guru: I have a thorough understanding of my teaching aims/objectives. I know why I'm concentrating on these particular skills and where they will be useful. I can see the bigger picture.

unaware — beginner — guru

9: Effective explaining

Unaware: I do not reflect on the way I explain things.

Beginner: When explaining something, I'm routinely doubtful if my explanations are useful (help students' understanding).

Guru: When explaining a theory, I demonstrate solutions and effectively highlight mistakes. I'm able to see things from the students' perspective. My explaining effectively helps students' understanding. I do not explain things unrelated to students' questions.

unaware — beginner — guru
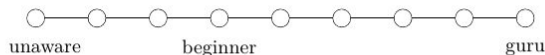
10: Learning environment, teaching systems

Unaware: I don't think about the classroom atmosphere. I don't see systems in my lessons.

Beginner: I tend to think about the policy and atmosphere in the class. I take over particular procedures and strategies (e.g., scoring) from others. Nevertheless, I don't see their effects or don't know how to adjust them.

Guru: I'm able to create a productive learning environment. I see the effects of the particular procedures and strategies I use (e.g., scoring, rewards, rituals). I don't take systems over blindly – I understand their effect and adjust them appropriately.

unaware — beginner — guru
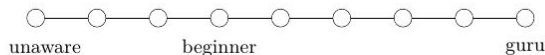
Reference Handbook

(useful info from the teacher training)

Indicators
Aspects of teaching you can observe directly.

Quantitative indicators

TIME MANAGEMENT
How much longer/shorter was the lesson compared to the plan?
What was my TTT (teacher talking time)?
How long were the students actively engaged?
What was the average time I spent with a single student?

TEACHER-STUDENT INTERACTION
How many questions did I ask? Were they open- or closed-ended?
How many questions did the students ask?
How many students did I (verbally) praise/reward for good work?

CLASSROOM ACTIVITIES
How many activities were the students involved in during the lesson?
How many students got lost in the tasks? How many were bored?

ATTENDANCE
How many students attended the lesson? How many were late?
How many students left during the lesson?

Qualitative indicators

FEELINGS AND SELF-SATISFACTION
What emotions did I have during the lesson?
How did the students behave? Were they engaged/active?

LESSON STRUCTURE
Did the students know what to do, how to do it and why?
Did I follow the lesson plan? If not, why?

LESSON CONTENT
Is my teaching diverse enough (task types, tools, materials, . . .)?
Does the content match the learning outcomes I want to reach?

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Revised Bloom's taxonomy
Hierarchy of cognitive educational objectives, B. Bloom, 1956
Revised by D. Krathwohl, 2002 (added also a 2nd dimension)

1. **Remember (*knowledge*)**
   facts and terminology, classification and categorization thereof
   define, list, repeat, reproduce, describe, identify, recognize

2. **Understand (*comprehension*)**
   reformulation, simple interpretation and extrapolation
   rewrite, extend, explain, paraphrase, summarize, give an example, illustrate on an example

3. **Apply (*usage*)**
   applying the method in the right situation, abstracting and generalizing
   carry out, apply, manipulate, demonstrate, implement, solve a model problem

4. **Analyze (*decomposition*)**
   decomposition into basic blocks, relations and interactions between them
   discuss, "break" into smaller parts, compare and contrast, design/select a solution, deconstruct, interconnect

5. **Evaluate (*judgments*)**
   assessment based on set criteria and standards
   conclude, test, assess, criticize, justify, argue, check

6. **Create (*synthesis*)**
   creating a new product, reorganization into a new structure
   generate, modify, rearrange, invent, design, build, compose

The boundaries between these levels are not strict. The list of actions can help you describe learning objectives and indicate how diverse your teaching is.

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Using the Diary

1. Self-reflection after teaching

2. Activities in teacher-training sessions
    (sharing, discussions, assessments, …)

3. Planning experimentation for the next teaching

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1. Self-reflection after teaching

2. Activities in teacher-training sessions (sharing, discussions, assessments, …)

3. Planning experimentation for the next teaching

Used for 2 semesters (fall 2017, fall 2018)
- ○ 25+20 TAs in teacher training
- ○ Diary obligatory but had a very positive reception

Lessons Learned: Successes

1. Supporting the reflective practice

   ○ *"To a great extent, the diary worked as a 'kick' to sit down and think about my lesson."*

   ○ *"[I will use it] even more the following year when I'll be checking before every lesson to see what didn't work and what I did wrong."*

Lessons Learned: Successes

1. Supporting the reflective practice

2. Connecting teacher training sessions and actual teaching

   - *"[Thanks to the diary] I have a list of tools and activities to use together in one place."*

   - *"[...] before the lesson I noted down 'this must be mentioned to students' so as not to forget."*

Lessons Learned: Successes

1. Supporting the reflective practice

2. Connecting teacher training sessions and actual teaching

3. Having a broader impact

    ○ Used by language teachers, high school teachers

    ○ Other universities (non-CS fields) interested

Lessons Learned: Challenges

1. Dropout and irregular use
   - *"I wanted to use it, I printed it, but my enthusiasm lasted only for the first few weeks (about four)."*

   - *"I have a bad experience with filling the diary in too late [after the lesson] [...] I appeal to everyone to reserve 5–10 minutes right after the lesson [to fill in the diary]."*

Lessons Learned: Challenges

1. Dropout and irregular use

2. Clashes with other tools

    ○ *"[...] when we write it [in the report] to the professor, one does not want to rewrite everything into the diary."*

Lessons Learned: Challenges

1. Dropout and irregular use

2. Clashes with other tools

3. Poor fit for class format

   - *"I taught two seminar groups – each one bi-weekly and thus the seminars repeated. Apart from that, I taught no theory [...] if I taught [weekly] I would use the diary more often or more effectively."*

Lessons Learned: Observations

1. Medium and format
    - Electronic version?
    - Bigger format?

Lessons Learned: Observations

1. Medium and format

2. Amount of internal structure

   - More questions?

   - More free space?

Summary & Conclusion

A reflective diary to improve teaching skills for TAs and other novice teachers (not necessarily CS).

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Download, print and use as you wish!
- ○ Available on GitHub (PDF + LaTeX source)
- ○ Open license (CC BY-NC-SA 4.0)
- ○ Let us know what you think!
- ○ Diaries and paper for grabs after the talk!

github.com/teaching-lab/reflective-diary