

# Pay it forward - Planning and Assessment of a Coaching Seminar for Global-Design Team Alumni

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## Abstract

Global design teams have different problems and needs throughout their projects. For the teams' coaches this can amount to a high workload acquainting themselves with new topics and preparing different coaching sessions for the teams. In this paper, we present a coaching seminar that lets alumni of a global design course give additional coaching sessions to current teams, and thus allows relieving the dedicated team coaches. The alumni are given the opportunity to share their knowledge and to prepare and run a coaching session. The teams can discuss their problems with peers and receive additional input when needed. To ensure our goals are met we evaluated the seminar through observations and questionnaires and present the results as well as derived changes to the next iteration of the seminar.

**Keywords:** *Design Thinking Education, Coaching, Experience Transfer, Design Engineering*

## 1 Introduction

Former members of design teams are often used as coaches for new teams to pass on their knowledge and previous experiences. Usually, informal teaching for the coaches takes place upfront and, then, coaches are trusted to perform meaningful coaching sessions on their own. Continuous, structured assessment of their impact on the teams rarely happens, leaving the coaches uninformed of how their coaching was perceived and whether it helped the team. In this paper, we present a coaching seminar that allows alumni of a global design course [1] to prepare and execute coaching sessions for current teams. Coaches also have to prepare lean documentation about the respective topics in order to allow for future reuse. The coaches offer a variety of topics (e.g. decision making, interview acquisition, or presentation preparation), which are assigned to the teams in accordance with the project schedule and their current demand.

With this seminar we aim at offering additional helpful coaching sessions to the teams while taking some workload from the teams' main coaches. To evaluate the quality and impact of the coaching sessions, we qualitatively analyze each coaching input by observing the dynamics of the session and identifying positive and negative aspects of coaching work. Additionally, we perform a quantitative analysis by using questionnaires that assess how well the input was perceived by the team, how helpful it was at the respective point in the project, or how the ratio between practice and theory was perceived by the team. The coaching

sessions are observed with minimal interference (i.e., observers only interfere in case of wrong inputs) in order to allow for an undistorted assessment of their quality.

The rest of this Paper is structured as follows: Chapter 2 will reflect on related work, Chapter 3 introduces the global design course and the setup of the coaching seminar. The evaluation of the seminar and the coaching sessions is discussed in Chapter 4 while Chapter 5 gives an outlook on the next iteration of the course and concludes the paper with a summary.

## **2 Related Work**

Coaching is a common concept in innovation, design, and engineering education, e.g. as shown by the courses described in [1], [2], and [3]. Additionally, in a study on future trends in workplace learning settings, Kim et al. found that coaching and mentoring are important strategies in blended learning approaches [4].

Reich et al. have created a conceptual framework identifying five different coaching styles: the consultant, the supervisor, the instructor, the facilitator, and the mentor. The styles differ in terms of relation between coach and team, the goals of the coach and the way the coach intervenes [5]. Building on this work, Reich et al. evaluated the perception of these coaching styles with students, coaches and teaching staff [6]. They found that coaches rated roles with a higher workload for themselves worse than the students, e.g. the instructor, facilitator, and supervisor roles. Furthermore they found that high performance teams and coaches saw their main roles in being a mentor, facilitator and supervisor while low-performing teams had coaches that saw themselves mainly as mentor. These findings indicate that teams have different coaching needs and require coaches to follow more than one coaching style as needed. If the teams dedicated coach has to fulfill all the coaching needs of his team he will have a higher workload. We address this issue with our coaching seminar by introducing additional coaches, thus lowering the workload of the dedicated team coach and satisfying the coaching needs of the team.

Hackman and Wageman found that effective coaching requires four conditions to be met, two of which have to do with the coaches' actions [7]:

- “Coaching behaviors focus on salient task performance processes rather than on members' interpersonal relationships or on processes that are not under the team's control”, and
- “Coaching interventions are made at times when the team is ready for them and able to deal with them”

We disagree with the first condition, as our teams specifically asked for help with interpersonal issues, especially with cultural difficulties. A topic that has also been addressed by other researchers, e.g., Grimheden et al. introduced special culture coaches that served as ambassadors for the “other” culture [8] in a global virtual team. In our seminar one of the alumni coaches gave a coaching session addressing the cultural difficulties while the global team was visiting. We agree with the second condition and want to address it by giving additional coaching sessions when the teams request them.

## **3 Seminar Setup**

The context of our research is a graduate-level course that is part of a global design education effort that originated from Stanford's ME310 course [1]. It is a nine month, global, project-based, design course in which a design team consists of students from two or three universities. Each team works on a challenge given by an industry partner. The teams are supported by a corporate liaison from the industry partner and a team coach, usually recruited

from course alumni. In addition, teachers and coaches give inputs and advice to all teams. Figure 1 illustrates the timeline of the course.

The nine months are structured into different assignments focusing on the exploration of user needs, prototyping and testing. The first prototypes focus on exploring different solutions. Starting with the Functional System Prototype the assignments focus on implementing the final idea.

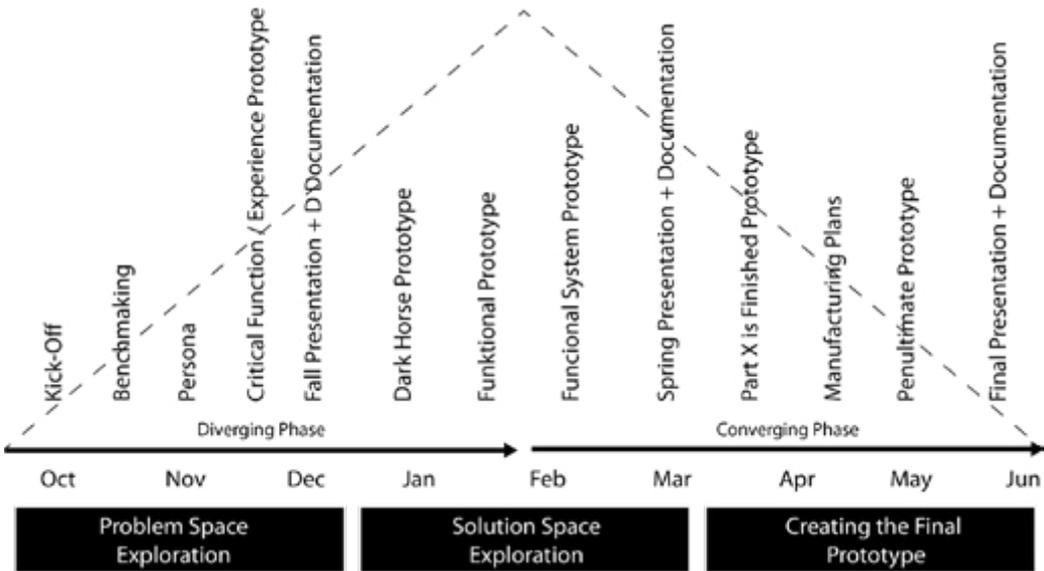


Figure 1 Timeline of the Global Design Course

Similar to other universities in the network that has formed around the ME310 course, we found that employing alumni as permanent team coaches is a valuable approach, as the former students can share their experiences with the new team and have the possibility to gain insights into teaching and coaching. Therefore each of our design teams in ME310 has a dedicated alumni team coach. However, we found that in addition to general inputs and lessons on methodologies, each team requires input on special topics as it has to solve project specific problems. Expecting the team coaches to prepare coaching on all these topics would require them to get acquainted with completely new topics or problems they do not yet have expertise in. Additionally, preparing such sessions results in a much higher workload for them. These two facts led us to designing a coaching seminar which runs in parallel to the first two thirds of the ME310 course. The seminar allows additional alumni of the course to gain experiences in coaching and share their knowledge on different topics. It provides the current project teams with a possibility to receive coaching on specific topics as needed and takes some of the workload of the dedicated coaches.

Figure 2 depicts the sequence of events of the course. In a first meeting, all alumni coaches were given an introduction to general coaching guidelines and the advisors discussed possible topics which each alumnus based on their expertise and experiences in their own projects. Based on these possible topic collections we assigned each alumnus to one of the three teams. The coaches met with the team they were to coach and discussed the final topic and the teams needs with the students. Afterwards they prepared a coaching session and a lean documentation on the topic chosen together with the team. This lean documentation served

two purposes, it was a hand out for the coached team to remember the most important aspects and it allowed the dedicated team coaches of the other teams to repeat the coaching session with their team if the topic should become interesting to them. The concept and the documentation were then reviewed with the seminar advisors, before actually coaching the team. During the actual coaching session seminar advisors took part as silent observers.

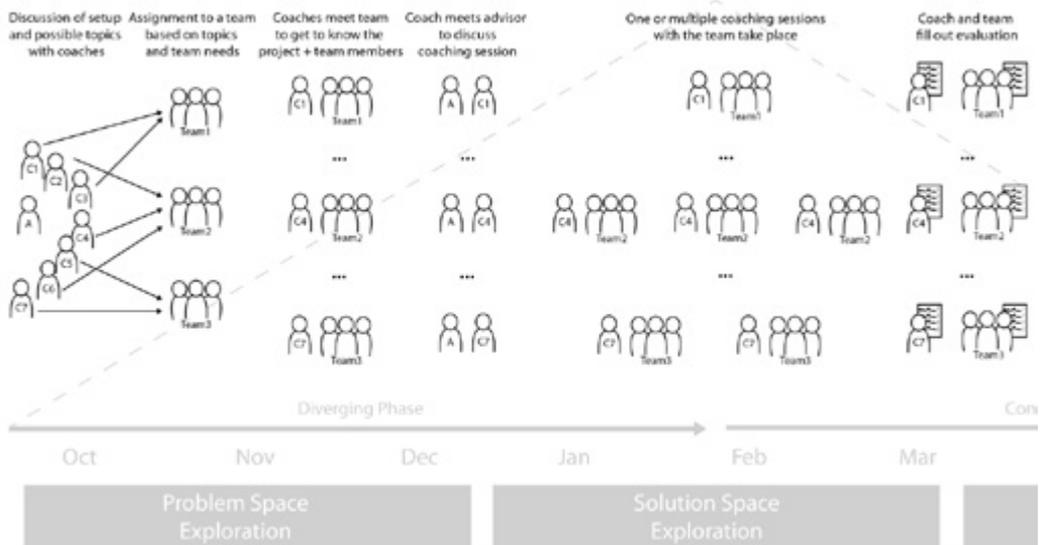


Figure 2 Timeline of the Coaching Seminar

To evaluate the coaching efforts and the impact on the teams we devised a concept of evaluating each coaching session and gaining additional insights into the dynamics, and positive and negative aspects of such coaching sessions. The evaluation concept consists of two questionnaires, one for coaches and one for the coached students and an evaluation sheet for the teaching staff. Alumni coaches as well as the coached teams were asked to fill out the questionnaires after their coaching session, rating the session in general, the use of tools (e.g. hand-outs, whiteboards, and exercises), the ratio of theory vs. practice, and pointing out positive and negative aspects of the coaching sessions. The advisors filled out the evaluation sheet during the session rating preparation, structure, theoretical and practical components, empathy of the coach for the team and general impressions they noticed.

#### 4 Evaluation

In this year's iteration of the seminar seven course alumni gave coaching sessions. All the alumni were first time coaches and alumni of last year's course. Each coach gave a session to one of the three four-student teams. For one of the coaching sessions the partner team was available so the session included 7 students. The topics coached included decision making as a team process, interview acquisition, global documentation, presenting abstract concept in a tangible manner or getting honest user feedback. Depending on the topic, the coaches gave one or multiple input sessions lasting between 30 min and four hours and provided two to four pages of documentation. The first results show that alumni value the possibility to pass on their gathered knowledge by giving coaching sessions, while the teams find their input valuable for their ongoing projects.

## 4.1 Self-evaluation of the coaches

Out of seven coaches, six answered the questionnaire after giving their coaching session. We asked the coaches to describe positive and negative aspects of their coaching session, the tools they used and whether they found them helpful, and the ratio between theory and practice.

### 4.1.1 General impressions

The positive aspects of their sessions described by the coaches included engaged team members, and practical tips and personal stories from their own projects as a good way to explain their recommendations. The main disadvantages mentioned were the limited time of the team members and some issues with executing their coaching ideas e.g. “I wish I had more experience with regards to the balancing act between the actual prototype and the requirement of the cooperate partner.” or “Maybe we could have done a warm-up exercise or anything similar.”

### 4.1.2 Tools

When asked about tools that were used during the coaching session most coaches mentioned the whiteboard, the hand out and / or slides, and the timer. Three of the coaches found that the whiteboard was useful to collaboratively work with the team as the following statement describes “The whiteboard was really useful in discussions and ideation.” Two of the coaches found the documentation in form of handouts or slides useful for themselves as a guide to follow but not so much for the team. One coach described this as follows: “[The] handout was only helpful for myself, not really for the team at the time of the coaching session.” Other coaches in contrast found the documentation very helpful for the team as a summary and a reminder for the future, e.g. “I think the most helpful artifact, that resulted from the coaching is the handout I prepared for the team members. By having all important information as a rule set at hand, it will be easier to remember and act on the advice given in the next user testing.” It seems the difference here can be argued with the amount of theoretical information needed for some topics and the rather practical sessions were team and coaches mostly worked together and a summarizing document is less needed. The timer was only mentioned by two coaches and seemed only important to sessions with a schedule of inputs and exercises and not so much for sessions that mostly used discussions.

Interestingly most coaches described tools they used together with the team during the coaching session. However one of the coaches described a tool he used for himself: “I essentially prepared a full discussion agenda with all points that I would want to bring across plus possible responses on the team's side that I could use to follow, skip parts that were not applicable or deep dive into others they were interested in. That was very helpful to keep track of the content, to not diverge too much and to always know what to say next.” This idea seems very helpful for topics that involve longer discussions.

### 4.1.3 Theory vs. practice

Naturally, different coaching topics require a different level of theory and practice. When asked to rate the ratio of theory and practice for their coaching session most coaches described that the level of theory and practice was experienced as fitting for the topic as the following statements reflect: “The topic being very theoretical in nature, there was only limited practical coaching to do. I saw no need for practical coaching for this topic.” and “The team was already aware of the goal of the theory, so I needed less time to introduce it to them and we were able to focus more on the prototype itself.”

#### 4.1.4 Summary

Overall the alumni valued the experience of coaching. One coach stated “I really like the opportunity to actual[ly] coach, which is still rare in university in general.” Another coach wrote “I like the idea of a coaching seminar. I also like, that the ME310 Alumni are still part of the ME310 family, with the coaching seminar more than ever.” highlighting, that the seminar provides an opportunity for the alumni to stay connected with the course.

### 4.2 Evaluation of coaches by student teams

During the global design course each of the three teams was coached by two or three alumni coaches. One coaching session even involved students from the global university who were visiting during the time of the coaching. After each session, all participating students were asked to fill out the questionnaire. We received 21 of 31 possible responses. For each coaching session at least two students answered the questionnaire. Similar to the coaches, the students were asked to describe positive and negative aspects of the coaching session, tools used and whether the tools were useful and the ratio of theory and practice during the coaching session.

#### 4.2.1 General impressions

The major positive aspects the students saw in the coaching sessions included a fitting topic that helped them with a current problem or need. For example students mentioned “it structured our process of finding interview partners”, “useful coaching which helped us to explain our project topic better” or “we gained really good insights into testing especially with elderly people”. Negative aspects were found mostly in the timing of the coaching sessions as most students wished to have had the sessions earlier in the project. This can be seen in the following reflections “I would have liked the coaching a little earlier, as some points are really valuable ... especially pointing out some points again, that we forgot over the time.” or “the whole coaching session was maybe a little too late in our process and we couldn't use as much as we would have liked to”. This lateness is due to the fact that the global design course starts about a month earlier than other courses at our university, while we started the coaching seminar at the normal time.

#### 4.2.2 Tools

The student's evaluation of tools used during the coaching session matches the one from the coaches. The Whiteboard and the documentation in form of hand outs or slides were most mentioned. The students found “structuring [the] concept on whiteboard was quite helpful” and “visualizing the different priorities for our project [on the whiteboard] was really nice for understanding the team” and, thus, agree with the coaches that whiteboards are a good tool for collaborative coaching sessions. The handout was described as “pretty helpful” or “very helpful for future reference”. Unlike the coaches, no student experienced the handout as not helpful. The timer was mentioned as a tool in use, but no comments were made on its usefulness. This is probably because students don't realize the importance of timing as long as the coach has a good time management

#### 4.2.3 Theory vs. practice

Similar to the coaches the students found the ratio between theory and practice well suited for the respective topic as reflected by statements like “[It was] a good mixture between exercises and theory.” or “[The coaching was] very practical, good for this topic because I think there is not too much theory.”

#### 4.2.4 Summary

Overall the students valued the coaching from course alumni as it gave them insight into former projects and provided them with additional input when they needed it, e.g. “[the coaching] was in the perfect project phase” or “the general theme was awesome as we [as a team] have problems with that”.

### 4.3 Coach and student ratings

Complementary to the text based questions, students and coaches were asked to rate the coaching session in general and the ratio between theory and practice on a Likert Scale ranging from 1 - “Very good” to 5 – “Not good at all”. Additionally, the students were asked to rate how well the coaching session fit into their current process.

#### 4.3.1 General ratings

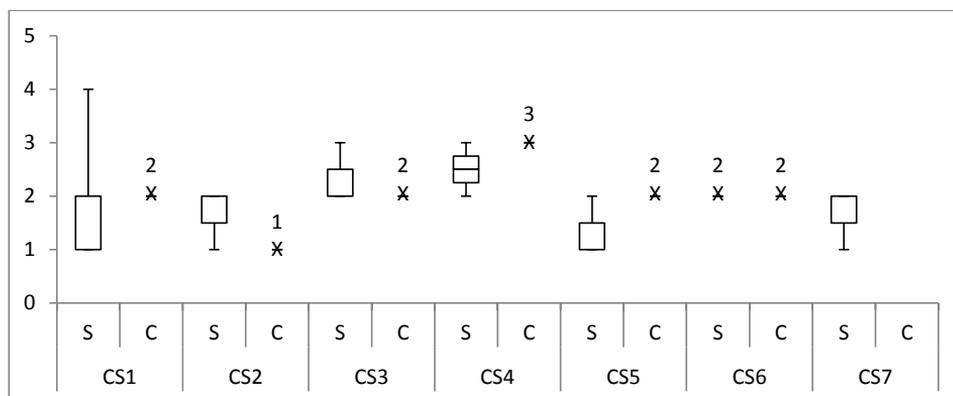


Figure 3 General Ratings of Coaching Sessions by Coaches and Students

Figure 3 depicts the general student (S) and coach (C) ratings for the seven coaching session in a Box-and-Whisker Chart. As can be seen all coaches rated their session inside the range of student ratings. The rating of the coaches from coaching session CS1, CS3 and CS6 are within the 2<sup>nd</sup> and 3<sup>rd</sup> quartile of student ratings. The rating of the coaches from coaching session CS2, CS4 and CS5 correspond with the outliers of student ratings. For these coaches it would be recommended to reflect on the students textual answers to see why most of them rated the session better or worse than the coaches themselves.

#### 4.3.2 Rating of Theory and practice

Figure 4 shows the ratings of the theory-to-practice ratio of students and coaches for the seven coaching sessions. As can be seen, coach and student ratings differ more on this topic as only the coach rating from session CS4 is between the 2<sup>nd</sup> and 3<sup>rd</sup> quartile. The coaches from sessions CS2, and CS5 correspond with the worse outliers of student ratings. And the coaches from sessions CS1 and CS6 rated the ratio worse than any of the students. In CS1 the coach would have liked to find some more time for theoretical inputs, while the coach from CS6 would have liked to have some more time for a practical session with the team. Only the coach from session CS3 rated the ratio better than most of the students. It could be interesting to look further into the different ratings on this topic by interviewing students and coaches again. However, we think the ratings and the associated comments by the coaches and students indicate that the coaches have higher expectations towards their coaching session and can't fit everything they would like into the timeslots for coaching sessions while the students find the provided input sufficient.

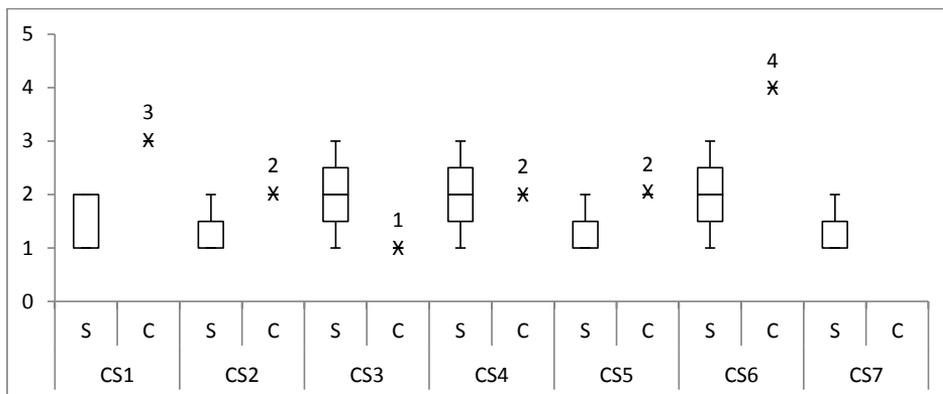


Figure 4 Theory vs. Practice Rating of Coaching Sessions by Coaches and Students

#### 4.3.3 Rating of fit for the process

Figure 5 depicts the students rating of how well the coaching session fit into their current process. As can be seen, these ratings are the worst from the students and as the comments in Section 4.2.1 describe, this is due to the fact that most students would have liked the coaching sessions to take place earlier in order to make even more use of them.

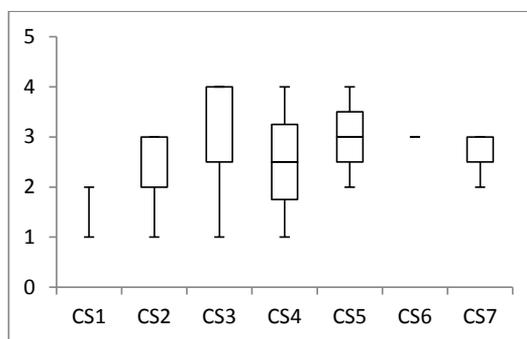


Figure 5 Ratings for Project Fit of the Coaching Sessions by Students

#### 4.4 Evaluation of coaches by the advisors

As described in Section 3 each coaching session was observed by one of the course advisors. This was done for three reasons:

- to be able to grade the coaching session,
- to be able to intervene in case the coach is giving wrong input, and
- to evaluate the quality of the coaching sessions.

Overall we found that all coaches were able to gain empathy for the team from their preparation session and managed to provide a coaching session with a useful topic for the team. This is also reflected by the coaches and students evaluation. Similar to the coaches themselves and the students we found the ratio of theory and practice fitting for the topics. However, for some of the more theoretical topics, a few exercises could have helped to make the information more tangible, e.g., writing a mail to request interviews together. Additionally we noticed some issues in guiding discussions were it seemed the alumni coaches were missing experience of such situations. For example, in one coaching session the students were discussing the same arguments over and over while the coach was just standing there listening

and the advisors had to step in to break the fruitless discussion. In a different session the students seemed very tired and the coach had a hard time getting them to participate instead of just listening to him. In this session the advisor did not intervene but noted that providing a set of warm ups and similar tools would be helpful for the alumni coaches.

## 5 Outlook and Summary

Overall the seminar was perceived well by teams and coaches. The inputs provided by the alumni gave students the opportunity to discuss their project and problems with peers. Additionally, the inputs were perceived as valuable and relevant as they were mostly aligned with the team's process and gave first hand insights into former projects. For the coaches the seminar provided an opportunity to reflect on their own projects and pass on the knowledge gained therein.

The positive feedback encourages us to continue this seminar in the future. However, the evaluation uncovered some flaws in our execution, so we plan on some adaptations to the course for the next iteration.

We noticed a couple of actions we would like to collect as "best practices" for a rerun of the seminar. These include:

- Taking some time to get to know the team's current status and problems upfront, e.g. through a personal meeting with the team or reading the latest documentation.
- Starting with a warm-up if the team seems to be sleepy or distracted.
- Discussing the Agenda for the coaching session at the beginning with the team.
- Ending a coaching session with action items for the next coaching or team session.
- Incorporate small exercises for theoretical inputs where possible.

We and the coaches found that they were not prepared enough for some coaching situations, such as long running discussions or dealing with a sleepy and distracted team. Therefore we will extend the introduction of coaching guidelines, e.g. by creating a kick-off workshop with exercises to help them.

Furthermore students and coaches found that some of the topics were coached too late. In the upcoming project year we will start the coaching seminar in parallel with the global design course allowing the coaching session to take place earlier when the teams most need them.

As discussed in Section 4.3.2 the coaches' rating of the theory to practice ration indicated that they had higher expectations towards their coaching sessions, namely giving more theoretical or practical input, than could be achieved in the timeslot. We plan to address this issue by allowing the coaches to give a more detailed theoretical input to all teams and following up with a practical coaching session.

Additionally one of the coaches was asking to offer a similar seminar for other design courses we have at our chair. As our approach proved valuable to students and coaches and helped to enhance the global project course with additional coaching sessions, the teaching staff could not have managed on their own, we believe such a seminar can be valuable for further design and engineering courses at our or other universities.

## References

- [1] Carleton, T. , Leifer, L., “Stanford’s ME310 Course as an Evolution of Engineering Design”, *Proceedings of the 19th CIRP Design Conference – Competitive Design*, Cranfield University, 30-31 March 2009.
- [2] Gerber, E., Olson, J., and Komarek, R., “Extracurricular design-based learning: Preparing students for careers in innovation,” *International Journal of Engineering Education*, vol. 28, no. 2, p. 317, 2012.
- [3] Ledsome, C. and Dowlen, C. “Design Coaching,” presented at the International Conference on Engineering and Product Design Education, Northumbria University, Newcastle Upon Tyne, United Kingdom, 2007.
- [4] Kim, K.-J., Bonk, C., Teng, Y.-T., Zeng, T. and Oh, E., “Future Trends of Blended Learning in Workplace Learning Settings Across Different Cultures,” in *29th annual Proceedings*, Dallas, TX, 2006, vol. 1, pp. 176–183.
- [5] Reich, Y., Ullman, G., Van der Loos, M., and Leifer, L., „Coaching product development teams: a conceptual foundation for empirical studies“, *Research in Engineering Design*, Vol. 19, No. 4, pp 205–222, 2009.
- [6] Reich, Y., Ullman, G., Van der Loos, M., and Leifer, L., “Perceptions of coaching in product development teams,” *CDROM Proceedings of the 16th international conference on engineering design (ICED)*, The Design Society, 2007.
- [7] Hackman, J. and Wageman, R. “A theory of team coaching,” *Academy of Management Review*, vol. 30, no. 2, pp. 269–287, 2005.
- [8] Grimheden, M., Van der Loos, M., Chen, H., Cannon, D. and Leifer, L., “Culture coaching: A model for facilitating globally distributed collaborative work,” in *Frontiers in Education Conference, 36th Annual*, pp. 15–20, 2006,.