

DESIGN COACHING

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ABSTRACT

As well as being a designer, one of the authors is a qualified sports coach. This paper looks at design education and practice with a coach's eye. How would you take a novice through a beginner's course to show them the rudiments of design? Could you give them practice sessions with training designed to bring out their potential? How would you prepare them for professional competition? If design were a competitive sport, what preparation would be done, what tactics would be adopted, and how could performance be maintained with the stamina to complete the course? This paper will attempt to apply tried and tested coaching practice to design to see if it produces new insights.

Keywords: Coaching, teaching methods, design processes, professional development.

1 INTRODUCTION

This paper fits together in two halves as the two authors have taken significantly different journeys, although we hope that we have been able to reach a joint conclusion. Both of us have been engineers and designers for years: perhaps the spur to getting us involved and interested in engineering as a career came early on: for Chris in the form of someone (his father) who was prepared to take his interests in design seriously and help him to think around the issues involved, even when at primary school. This was much like the role to be taken on by the design coach, although it wasn't called that at the time. Colin first wanted to be an engineer when he was nine. On that basis, he's been a design engineer for more than fifty years. He took up archery twenty years ago and is qualified as a club level coach. Since then he has been an active coach with several clubs, including helping to start up the club at Imperial College London. As a design engineer, he is very aware of the technology of archery, both in the different types of bows and arrows, and in the various accessories. At Imperial he used archery as a source for several student projects and supervised a PhD research project on bow design. In the academic world, he came to see the parallels between teaching engineering design to novice engineering students and coaching novice archers. Looking back over his industrial career, he could see similar parallels between design and sporting activity.

2 THE SPORTS COACHING CONCEPT

Sporting performance can last for a few seconds for an individual in a high jump, 90 minutes for a team football match, hours for a tennis match or a marathon, days for a first class cricket match, or months for a long distance yacht race. However, these longer events are in reality a series of smaller efforts where decisions on important actions are taken in the light of changing circumstances with periods of relatively routine activity and rest in between. The performer must train and prepare for each

event, focus on the task to be done, perform to the best of their ability, analyse and learn from their performance and then relax and recover before their next event. The coach's tasks are to analyse and advise during training, support and protect during preparation and performance, propose further training after the event and to prepare for the next event. A coach should also provide a secure and protective environment to help concentrate on the task in hand. Where necessary the coach may draw on other expertise to overcome specific problems such as diet or injury.

Design can take from a few weeks by one person for a simple device to ten years or more by several thousand people for a space vehicle. Yet even such projects consist of a series of many smaller design decisions, so all designers take part in a long series of relatively short design activities strung together into a longer event, just like an athlete. The designers must prepare by getting to understand the real needs of the customer and ensuring that the right expertise is available where and when it is needed. They need to focus on the task in hand and find the best compromise between the conflicting factors and have a clear communication with all those involved in the design and the production and use of the final product. They should record their progress and learn from the experience to inform future design tasks. The best design managers take on a coaching role, advising and guiding during the preparation, supporting the team through the ups and downs of the project, keeping them focussed on the task in hand, and helping them move onto their next project – and perhaps training to keep their expertise current. They provide a secure and protected environment to help concentrate on the task in hand. The manager should also make sure that all the necessary expertise is available.

The parallels between sporting performance and the design process are clear. The initial stages of learning in both show a similar pattern as can be seen in Appendix 1

3 COACHING DESIGNERS

The introduction to the topic for Chris came from the E&PDE 2003 conference where a paper was put forward by Bryce Dyer of Bournemouth University entitled *Citius, Altius, Fortius - integrating competitive principles into the designer's world* [1] This put forward a Design Performance Model using sports coaching analogies to determine ways of teaching undergraduate students on Product Design courses. The paper was speculative and no attempt was done to develop the thinking. Curiosity was roused: could design teaching be effective using this process? Issue 33 of *New Design* took up the topic with an article by Rod Petrie of Design Bridge on Design coaching [2].

The differences between a coach, a mentor and a trainer need to be emphasised. An effective way of comparing them is to take a transport metaphor and a pun. Trains use rails: they go in a specified direction. With coaches, the end destination is specified but they are free to travel anywhere between the points. The trainer, similarly, goes through a specified process to achieve a well-defined result: the coach develops the direction and is able to encourage achievement. A mentor, in contrast, has no real end definition in sight. This is closer to the personal driver, at the beck and call of the passenger and supports them in whatever journey they wish. Coaching is one way of teaching.

4 THE PROFESSIONAL ATTITUDE

The current design related professions can trace their roots back to medieval times, when the craft guilds maintained standards in the practical arts and skills. These were usually organized into three stages: apprentice, journeyman and master craftsman. An apprenticeship served for a period of years under a master. Once the novice reached an approved level of competence, they became journeymen and practiced their craft and

encouraged to travel and gain experience not available locally. After some years, a journeyman who showed sufficient expertise was accepted as a master and allowed to have their own apprentices, to whom they passed on learning and expertise. The reputation of the best masters was judged by the quality of their apprentices.

Modern design-related professional bodies mirror the three stages of the guilds with *student* and *member* grades, but the third *fellowship* grade has fallen short of the master concept. A record of good quality performance is required before awarding the grade, but there is no strong encouragement for them to pass on their experience or be recognized for doing so. In the sporting world the same three stages can be seen, but here good performers often go on to be coaches after retirement from active performance. It is rare for a good design practitioner to seek to take on a substantial role in educating novice designers. Indeed, the academic course pattern makes it difficult to fit even single lectures from an industrial practitioner into the timetable. Any practicing engineer or designer moving into academia finds that little of their expertise or experience is counted when grading them against their fellows.

4.1 Drawing Parallels

We have deliberately used similar language for both sports coaching and design teaching to highlight the parallels. Even within an apparently simple sport like archery, there are three different bow disciplines, target and field archery and more detailed divisions of types of competition. Within design there are the two major approaches of function and human interface, which each, in turn, break down into a large number of fields of interest and expertise.

5 DESIGN COACHING AT LONDON SOUTH BANK UNIVERSITY

Chris obtained University Fellowship funding to investigate Design Coaching at London South Bank University and employed Rod Petrie to work with the staff team. This approach was augmented with a second to develop the team's coaching skills for students. The plan was for five meetings to take place, with Rod providing input to the first and third and the second and fourth taken to developing the team's thinking and to produce directions for implementing coaching in student schedules. The fifth would be an introduction of the concept to students.

5.1 The process

The anticipation was that this would result in team development, the development of goals, an increase in teamwork and team effectiveness, proposals for incorporation of coaching into the teaching and the final result would be that students would be coached, possibly through the process of personal development planning that is now required by all UK higher education courses. The reality is always different. There was a negative and a positive input to the process: this meant that the team development exercises developed much-needed rethinking skills and rekindled a sense of team worth. A negative feature was that studio design teaching was equated to coaching and there was the feeling that "We coach anyway. What's new?" This was counteracted by the Mr Positive approach from Rod Petrie. Our challenge was to develop shared goals and pull where we wanted and where we were able to take risks and develop creativity.

5.2 Where we felt we were

We started off with a negative outpouring. What's wrong? Why do we feel confused, set upon and ignored? But there were positives: our position in central London, our library

and were looking for a job. They had to project themselves forward four years, identify what saleable skills they had developed through the course, and work out how they would achieve them. A significant process.

At the other end of the scale, some design graduates were given the opportunity to develop their final year undergraduate projects further through an Enterprise Associate Scheme. This included each associate starting up a company. Included in the package was an MSc– but one with a difference. They would pick up appropriate masters level modules from a combination of business school, engineering and design areas. Gluing these together were two specially-written modules on Technology Commercialisation using an algorithm developed by North Carolina University, and learning contract negotiation, where students make decisions about which learning process to follow to achieve their desired outcome. One of the associates said this was the first time that he had done anything other than taken the prescribed education diet – it changed the pattern of ownership. This involved sitting down with each associate and mapping out their projects, combining what was essential with what was important and what was desirable. As the University motto is: Become what you want to be.

6 CONCLUSIONS

We feel that this is a new and exciting development in design teaching. It derives from studio work but develops it significantly. It relies on students developing goals and owning their careers – and ultimately, their lives. Whilst empowerment is an overblown term it may be appropriate here.

Our recommendation is to find somewhere in your course where you can develop a coaching approach, giving students their own perspective and getting them to shape their own careers under your guidance. It's worth it.

We feel it is part being a professional to ensure that expertise is passed on and not lost to the next generations. Our activities in coaching have helped us pass on both our own design experience and that of others from whom we have learned. Our activities as design teachers have benefited from the insights into teaching and learning gained as coaches. We recommend that other design teachers extend not only their design expertise, but also their teaching expertise, if not in sporting activities then in some other interest, hobby, or pastime they enjoy. It will open their minds to new thinking and may help to open the minds of their students.

REFERENCES

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APPENDIX 1

COACHING NOVICES IN SPORT AND DESIGN

The table compares the basic processes of archery coaching and design teaching. The time scales are different but the sequence and the support requirements are very similar. (These points are only roughly in chronological order, may not be exhaustive and may repeat iteratively during the process to emphasise their message.)

Archery Coaching

Teach basic warm-up exercises to prepare appropriate muscles for the activity.

Make aware of basic safety procedures.

Demonstrate the action of shooting a bow.

Allow to shoot at short range under close supervision and guidance. Analyse, constructively criticise and repeat a number of times.

Show how to score, keep records and analyse their own performance.

Move to longer ranges as ability improves, reducing the level of supervision.

Encourage observation and criticism of more expert archers based on experience gained.

Run a beginner's tournament to give incentive, experience and encourage performance analysis under competition conditions.

Introduce to regular practice sessions with occasional constructive criticism of technique.

Individual problems are highlighted and steps taken to compensate for, or eliminate them.

Upgrade equipment as technique improves and understanding develops.

Encourage to enter tournaments to gain experience of real competition and observe more expert archers.

Give occasional constructive criticism as experience grows.

The novice has become a competent archer.

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Design Coaching

Develop basic drawing, design thinking and CAD skills to provide the necessary basis for the design process.

Make aware of responsibility implications of design decisions.

Outline the basic design process and provide significant case studies.

Give simple design exercises with advice and guidance available. Analyse, constructively criticise and repeat several times.

Show how to assess the qualities of a design and learn how to improve.

Try more challenging design exercises as ability improves with guidance available on request.

Present a range of well designed artefacts for analysis and criticism using insight from exercises.

Run a competitive design challenge to give incentive and to focus on understanding and solving real needs.

Carry out a series of design exercises with a variety of challenges to increase insight with some guidance.

Individual design quirks are examined to encourage a more balanced view of customer needs.

Introduce more advanced analytical and modelling methods as the need arises.

Give greater levels of design challenge using exercises derived from or collaborating with industry with realistic critique.

Give occasional constructive criticism as experience grows.

The student is ready to graduate to professional practice.

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